Blinkit Sales and Growth Dashboard using Power BI

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Submitted by

Hitesh Bardia
07418002721

Under the supervision of

Dr. Ankit Gambhir
Associate Professor

Department of Computer Science & Engineering
Delhi Technical Campus
28/1, Knowledge Park-III, Greater Noida - 201306 (U.P.)

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DECLARATION

This is to certify that the material embodied in this Major Project - Dissertation titled "**Blinkit Sales and Growth Dashboard using Power BI**" being submitted in the partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science & Engineering is based on my original work. It is further certified that this Major Project - Dissertation work has not been submitted in full or in part to this university or any other university for the award of any other degree or diploma. My indebtedness to other works has been duly acknowledged at the relevant places.

Hitesh Bardia
07418002721

CERTIFICATE

This is to certify that the work embodied in this Major Project - Dissertation titled "Blinkit Sales and Growth Dashboard Using Power BI" being submitted in the partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science & Engineering is original and has been carried out by HITESH BARDIA (07418002721) under my supervision and guidance.

It is further certified that this Major Project - Dissertation work has not been submitted in full or in part to this university or any other university for the award of any other degree or diploma to the best of my knowledge and belief.

Dr Ankit Gambhir
Associate Professor

Project Coordinators
Department of CSE

Prof. (Dr) Seema Verma
HOD - Department of CSE
Delhi Technical Campus, Greater Noida

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Hitesh Bardia (07418002721)

ABSTRACT

The Blinkit Sales and Growth Dashboard is a data visualization solution developed to simplify how Blinkit's business performance is tracked and analysed. By using Power BI, the dashboard turns complex sales data into interactive visuals, helping business teams make better, faster decisions. It provides a clear overview of essential metrics such as total sales, high-performing products, regional growth, and customer distribution patterns.

The project focuses on building an intuitive, user-friendly interface that displays processed data through charts, KPIs, filters, and graphs. Data is imported and transformed from structured sources like Excel and SQL, ensuring it is accurate and ready for meaningful analysis. Each component of the dashboard is designed to support decision-makers in understanding trends and monitoring performance without having to manually go through large spreadsheets.

Built for scalability and ease of use, the system ensures smooth navigation, customizable views, and consistent data refreshes for up-to-date insights. Business users can explore the dashboard to identify patterns, compare results across regions, and support marketing or operational strategies. Its modular structure also allows for future enhancements like forecasting and real-time data streaming.

Overall, this dashboard reduces reliance on manual data processing and provides a centralized platform for analysing sales performance. It increases transparency, supports goal tracking, and lays the groundwork for data-driven decision-making within the organization.

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

Blinkit Sales & Growth Dashboard : An Overview

The fast-paced expansion of e-commerce platforms has transformed the way businesses analyse customer behaviour and engage with their target audience.. Blinkit, a leading online grocery delivery service, has experienced substantial growth due to its focus on customer-centric services and real-time delivery. However, with such rapid expansion, it becomes crucial for businesses like Blinkit to analyse their sales performance, growth trends, and operational efficiencies. This project focuses on creating a comprehensive sales and growth dashboard using Power BI, a powerful business analytics tool. The dashboard aims to offer real-time insights into Blinkit's sales data, tracking performance metrics that can drive informed decision-making.

What Is an Blinkit Sales & Growth Dashboard?

A **Blinkit Sales and Growth Dashboard** is a business intelligence tool designed to visually present key sales metrics and growth indicators for Blinkit, a leading online grocery delivery platform. Built using Microsoft Power BI, the dashboard consolidates various data sources to provide real-time insights into Blinkit's sales performance. It displays interactive charts and graphs that showcase total revenue, order volume, top-performing products, and sales trends across different time periods and geographic locations. This visualization helps stakeholders understand market behaviour, monitor operational efficiency, and make informed decisions based on data-driven insights.

Beyond tracking sales, the dashboard also supports growth analysis by highlighting customer trends, purchase patterns, average order values, and month-over-month growth rates. With features like filtering, drill-down views, and comparative analysis, the dashboard serves as a critical decision-support system for Blinkit's management, marketing, and operations teams. It transforms raw data into actionable insights, enabling the company to evaluate its performance, identify potential opportunities, and plan strategic initiatives more effectively.

1.2 PURPOSE

The primary purpose of the *Blinkit Sales and Growth Dashboard* is to create a centralized, interactive, and insightful analytics solution that helps stakeholders visualize, monitor, and understand Blinkit's sales performance and growth trajectory. The dashboard aims to:

1. **Provide a Clear Overview of Sales Performance**
   • Enable real-time tracking of total sales, daily/monthly revenue trends, top-selling products, and sales distribution by categories or regions to assist in business decision-making.

2. **Assist in Identifying Growth Patterns and Trends**
   • Visualize growth metrics such as order volume changes, customer acquisition trends, and month-over-month comparisons to identify expansion opportunities and seasonal behaviours.

3. **Support Data-Driven Strategic Planning**
   • Equip management and marketing teams with powerful visuals and KPIs to make informed decisions regarding product offerings, customer targeting, and operational improvements.

4. **Enhance Business Intelligence through Automation**
   • Leverage Power BI’s capabilities to automate data updates, generate scheduled reports, and allow dynamic data exploration without requiring manual analysis.

5. **Improve Reporting and Presentation**
   • Replace static Excel reports with visually appealing and easily interpretable dashboards that can be shared with stakeholders during meetings or strategic reviews.

6. **Encourage Operational Transparency and Accountability**

   • Provide clear visibility of sales performance to all relevant teams, ensuring consistent alignment with business goals and fostering a culture of data transparency.

1.3 SCOPE

1. The scope of the *Blinkit Sales and Growth Dashboard* encompasses the development and deployment of a data visualization solution using Microsoft Power BI to analyse and monitor Blinkit's sales performance and business growth. The dashboard is specifically designed for business analysts, sales managers, and decision-makers who require an interactive, real-time, and comprehensive overview of key business metrics.
2. This dashboard provides core functionalities such as visual tracking of sales trends over time, identification of top-performing products and regions, revenue breakdowns, and growth analytics. It also incorporates features like drill-down capabilities, slicers for dynamic filtering, and data segmentation based on categories like time, region, and product type. The solution enhances strategic insight through performance comparison visuals and KPIs, supporting data-driven business planning.
3. On the technical front, the dashboard is built using Power BI Desktop for report creation and Power BI Service for publishing and sharing across teams. Data is imported from structured Excel files or CSV formats simulating Blinkit's order and revenue data, ensuring a consistent data pipeline. Visualizations are tailored for clarity and interactivity, with dashboards optimized for use on both desktops and tablets.
4. This project is focused on businesses in the e-commerce and retail sector that require analytical tools for internal use. While the current implementation includes essential visualizations and business insights, the design is modular and scalable, allowing for future upgrades such as real-time data integration, predictive analytics using machine learning, and advanced user access controls.

5. The current scope is limited to static datasets and interactive dashboards within the Power BI ecosystem, and it does not cover live database connectivity, mobile-specific design, or automated email reporting—though these may be integrated in later versions based on user feedback and business needs.

SIGNIFICANCE

The *Blinkit Sales and Growth Dashboard* serves as a crucial tool for transforming raw sales data into actionable business insights, driving strategic decision-making across various departments at Blinkit. Traditionally, businesses relied on static reports or spreadsheets, which lacked interactivity, scalability, and timely updates. This project addresses those inefficiencies by providing a centralized, automated, and highly visual platform for analysing sales and growth metrics in real-time.

By integrating key performance indicators (KPIs) into one cohesive dashboard, the system significantly enhances visibility into sales trends, customer behaviour, product performance, and regional comparisons. The use of Power BI allows for advanced visualizations, dynamic filtering, and interactive data exploration, which improves collaboration and ensures that business stakeholders can draw meaningful insights without requiring deep technical skills. The platform supports efficient communication between teams by standardizing the presentation of data and promoting a data-driven culture.

Furthermore, the project adopts industry-standard BI practices, ensuring reliability, scalability, and security in data handling. The modular structure of the dashboard also allows future enhancements such as predictive analytics and real-time data integration, thereby extending its long-term value. In essence, this project not only optimizes sales monitoring processes but also empowers decision-makers with timely, accurate, and easily digestible information, contributing to Blinkit's operational agility and growth strategy.

1.4 ORGANIZATION OF REPORT

1. **Introduction**

   • *Project Overview*: Introduces the Blinkit Sales and Growth Dashboard, explaining its purpose to visualize sales metrics and business growth trends using Power BI.

   • *Significance*: Highlights how the dashboard improves data accessibility, supports strategic decision-making, and provides an efficient, visual way to interpret sales data.

   • *Technology Stack*: Mentions the use of Microsoft Power BI for dashboard development, along with Excel/CSV data inputs and optional Power BI Service for publishing and sharing.

2. **Problem Statement**

   • *Problem Definition*: Discusses the limitations of traditional static reporting tools, such as Excel, in handling dynamic sales data and providing timely insights.

   • *Objectives*: Outlines the project's core goals — creating an interactive dashboard, visualizing KPIs, identifying trends, and supporting sales and growth decision-making.

3. **Requirements and Analysis**

   • *Functional & Non-Functional Requirements*: Details the expected system functionalities like dynamic filtering, visual interactivity, and performance optimization.

   • *Feasibility Study*: Analyses the project's technical and operational feasibility, particularly in using Power BI within existing business environments.

   • *Tools & Platforms*: Lists tools such as Power BI Desktop, Power BI Service, Excel, and data transformation features like Power Query.

   • *Diagrams*: Presents high-level architecture and flow diagrams explaining how data is imported, processed, and visualized.

4. **System Design**

   • *Structure Chart*: Describes the modular layout of dashboard pages (e.g., Sales Overview, Product Performance, Growth Analysis).

   • *Module Explanation*: Breaks down major dashboard sections and the KPIs included in each module.

• *Flow Diagrams*: Illustrates how data flows from sources to the Power BI dashboard.

• *Schema Design*: Details the structure of sample datasets used, including fields like product ID, order date, category, sales amount, and region.

5. **Implementation**

   • *Screenshots*: Provides snapshots of key dashboard views including filters, graphs, and KPI cards.

   • *Implementation Details*: Explains how visuals were created, customized, and linked to slicers and filters in Power BI.

6. **Testing**

   • *Testing Strategy*: Describes how dashboard elements were tested for accuracy, visual correctness, and responsiveness to filters.

   • *Test Cases*: Shares sample scenarios such as verifying the correctness of total sales numbers or filtering by region and validating product data.

7. **Results and Discussion**

   • *Performance*: Summarizes insights derived from the dashboard and how they help identify sales trends and regional performance.

   • *User Feedback*: Includes feedback from potential users and improvements made.

   • *Documentation*: Lists supporting files, user instructions, and dashboard descriptions.

8. **Conclusion and Future Scope**

   • *Conclusion*: Recaps the project outcome, underlining the impact of data visualization on business decision-making.

   • *Limitations and Future Work*: Mentions current limitations like reliance on static datasets and proposes enhancements such as real-time data connections, advanced analytics, and predictive modelling integration.

CHAPTER 2: PROBLEM STATEMENT

2.1 PROBLEM DEFINITION

The *Blinkit Sales and Growth Dashboard* addresses the challenges associated with manual or semi-automated reporting methods used in analysing business performance. Traditionally, companies depend on static reports and spreadsheets to track sales, growth, and product performance, which often leads to outdated insights, scattered data, and limited interactivity. As data volume and complexity grow, these methods become inefficient, error-prone, and incapable of supporting timely decision-making.

Moreover, as Blinkit operates in a fast-paced e-commerce environment, there is a growing need for real-time visibility into sales trends, product demand, customer preferences, and regional performance. Without a centralized and visual system, stakeholders face delays in identifying performance gaps, missed opportunities for sales growth, and a lack of coordination between marketing, supply chain, and sales teams.

The primary issues can be summarized as follows:

1. **Static and Fragmented Reporting**
    - Sales reports are often created manually using Excel or disconnected tools, leading to data duplication and inconsistencies.
2. **Lack of Real-Time Insights**
    - Traditional reports do not update automatically, resulting in delayed decision-making and missed market trends.
3. **Inadequate Visualization**
    - Complex data is hard to interpret without intuitive visuals, making it difficult for stakeholders to derive meaningful insights.
4. **Scalability and Data Integration Challenges**
    - Existing tools may not handle growing datasets efficiently or support integration with various data sources.
5. **Limited Accessibility and Interactivity**

- Static reports are not user-friendly or easily accessible across departments, and do not allow users to interactively filter or explore data.

2.2 OBJECTIVES

The primary aim of the *Blinkit Sales and Growth Dashboard* is to provide a centralized, visual, and interactive system that enables stakeholders to monitor key sales metrics, evaluate business growth, and make data-driven decisions efficiently. The project is designed using Microsoft Power BI, which facilitates real-time data visualization, advanced analytics, and streamlined reporting. The specific objectives include:

1. **Automated and Dynamic Reporting**
   • *Goal*: Eliminate manual report creation by automatically updating dashboards with the latest data.
   • *Tools*: Use Power BI Desktop with scheduled refreshes and data transformations.

2. **Real-Time Sales Monitoring**
   • *Goal*: Enable users to view live sales trends and KPIs such as revenue, order volume, and customer acquisition.
   • *Tools*: Integrate Power BI with regularly updated Excel/CSV files or databases.

3. **Interactive Data Exploration**
   • *Goal*: Allow users to filter data by date, category, region, or product to explore specific trends.
   • *Tools*: Use slicers, drill-throughs, and bookmarks in Power BI.

4. **Product and Regional Performance Analysis**
   • *Goal*: Identify top-performing products and regions to optimize inventory and marketing strategies.
   • *Tools*: Create performance cards, clustered charts, and heat maps.

5. **User-Friendly Visualization**

   • *Goal*: Present data in an easy-to-understand format for both technical and non-technical users.

   • *Tools*: Use custom visuals, dashboards, and formatted reports in Power BI.

6. **Scalability for Future Enhancements**

   • *Goal*: Design the dashboard to accommodate future features such as predictive analytics, real-time integration, or mobile access.

   • *Tools*: Leverage Power BI Service for publishing, sharing, and collaboration.

CHAPTER 3: ANALYSIS

3.1 SOFTWARE REQUIREMENT SPECIFICATION

3.1.1 Functional Requirements

Data Integration

- The system must connect to various structured datasets representing Blinkit's sales, customer demographics, product categories, and order trends.
- Data sources may include CSV files, Excel sheets, SQL databases, or web APIs.

Data Cleaning and Transformation

- Raw data must be cleaned, formatted, and transformed using Power Query.
- Missing values, inconsistencies, and duplicates must be handled appropriately.

Interactive Dashboard Creation

- Create interactive dashboards displaying key metrics such as:
    - Total Sales
    - Order Volume
    - Customer Segmentation
    - Sales by Category/Region/Time
- Users should be able to filter data dynamically using slicers**.**

KPI and Trend Analysis

- Track KPIs like Gross Sales, Average Order Value, Customer Retention, and Daily/Monthly Growth.
- Visualize trends using line charts, bar graphs, and area plots.

Data Refresh and Automation

- Enable scheduled data refreshes for real-time insights.
- Automate reports to update with new data inputs.

User-Friendly UI

- Ensure the dashboard is intuitive with clearly labelled visuals.
- Use consistent colour themes and tooltips for better interpretation.

3.1.2 Non–Functional Requirements

1. **Performance**
    - The dashboard must respond quickly to user inputs and filters (<2 seconds).
    - Large datasets should be optimized with aggregation and filtering.
2. **Scalability**
    - The data model should support adding new datasets or metrics without redesigning the entire dashboard.
3. **Security**
    - If deployed online, restrict access through organizational-level sharing.
    - Handle sensitive business data with appropriate privacy controls.
4. **Usability**
    - Designed for business users with minimal technical knowledge.
    - Interactive elements should be self-explanatory.

3.2 PROJECT FEASIBILITY STUDY

The feasibility study assesses whether the dashboard project is practical, efficient, and achievable within the given time, cost, and technical constraints. It covers five key areas:

1. Technical Feasibility

Assessment:
The project uses **Power BI**, which supports integration with multiple data sources (Excel, CSV, SQL, etc.), powerful data transformation tools (Power Query), and rich visualizations (DAX, charts, filters). These capabilities align perfectly with the project goals—creating a sales and growth dashboard.

Conclusion:
Technically feasible — All necessary tools and features are available in Power BI to implement this project smoothly.

2. Operational Feasibility

Assessment:
The dashboard is intended to help businesses like Blinkit monitor key performance indicators (KPIs), track sales performance, and make data-driven decisions. The user-friendly visuals and interactive reports will support decision-making for marketing, inventory, and regional strategies.

Conclusion:
Operationally feasible — The dashboard solves a real business need and will be useful to stakeholders.

3. Economic Feasibility

Assessment:
Power BI Desktop is free to use for development. Data sources are either fictional, publicly available, or provided for academic purposes.

Conclusion:

Economically feasible — The cost of development is minimal, making it a cost-effective solution.

4. Schedule Feasibility

Assessment:

The project was planned in clear phases:

- Data collection
- Data cleaning & modelling
- Dashboard design
- Testing and review

All phases were completed within the academic semester.

Conclusion:

Schedule feasible — The project timeline was realistic and successfully met.

5. Legal and Ethical Feasibility

Assessment:

The project does not use any confidential or sensitive business data. It follows ethical practices in data visualization and complies with privacy norms by using either sample or anonymized data.

Conclusion:

Legally and ethically feasible — No legal or ethical concerns arise from the project.

3.3 TOOLS, TECHNOLOGIES, PLATFORM USED

The **Blinkit Sales and Growth Dashboard** was developed using a suite of modern tools and technologies tailored for data visualization, business intelligence, and dashboard development. The selected tools offer robust data handling, real-time analytics, and dynamic visual representation to ensure an effective and interactive decision-support system.

1. Data Source and Storage

- **Microsoft Excel / CSV**: Sales and operational data from Blinkit were sourced in structured formats such as Excel and CSV. These files acted as the primary data source for importing into Power BI.
- **Google Sheets**: In some cases, dynamic or shared datasets were maintained on Google Sheets for easy collaboration and real-time data updates.

2. Data Analysis and Visualization Tool

- **Power BI Desktop**: The core platform used for creating interactive dashboards. Power BI offers robust data modelling, transformation (via Power Query), DAX calculations, and highly customizable visuals to represent KPIs, sales trends, growth charts, and category performance effectively.
- **Power Query**: An ETL tool integrated into Power BI used to import, clean, transform, and shape raw data before it's loaded into the data model.
- **DAX (Data Analysis Expressions)**: A formula language used in Power BI for creating custom calculated fields, measures, and aggregations to support dynamic visuals and advanced analytics.

3. Data Transformation and Modelling

- **Data Model Designer (in Power BI)**: Used to define relationships between different datasets, build hierarchies, and optimize data for fast query performance. Ensures smooth drill-downs and filter interactions across visuals.
- **Measures and Calculated Columns**: Used for generating business-critical insights like Monthly Sales, Growth Rate, Average Order Value, Product Category Share, and Top-Performing Locations.

4. Dashboard Features and Visual Elements

- **Interactive Visuals**: The dashboard utilizes a mix of bar charts, line graphs, pie charts, cards, slicers, and KPIs to visualize Blinkit's sales and growth metrics.
- **Drill-through and Filters**: Enabled across pages to allow users to explore data from overall trends down to individual product or city-level performance.
- **Real-Time Insights**: Dashboards can be configured for scheduled refresh or live data connections to ensure stakeholders always have access to the most recent insights.

5. Deployment and Sharing

- **Power BI Service (Cloud)**: Used to publish, host, and share the dashboard with stakeholders. It provides web-based access to reports, role-based access control, and mobile optimization.
- **Power BI Embedded / Link Sharing**: Allows reports to be embedded in websites or shared securely via access links for easy stakeholder collaboration.

6. Development Tools

- **Microsoft Power BI Desktop**: The primary development environment for designing, testing, and visualizing reports before publishing.
- **Microsoft Excel**: Often used for initial data formatting, calculation checks, and exporting filtered datasets from reports.

- **PowerPoint / Canva** *(for presentations)*: Utilized for preparing visual summaries and report snapshots for final presentations and documentation.

7. Collaboration and Version Control

- **OneDrive / Google Drive**: Used to store data files and dashboard drafts securely and support version tracking across different development phases.

3.4 SYSTEM DESIGN DIAGRAMS: USE CASE & DATA FLOW

3.4.1 Use Case Diagram

Overview of Actors

In the Blinkit Sales and Growth Dashboard project, there are key external actors who interact with the system to carry out specific tasks. Each actor has distinct responsibilities, and their interactions ensure the smooth operation of the dashboard.

1. **Admin:** The admin oversees the entire dashboard system. Their responsibilities include managing user roles, controlling access to different sections of the dashboard, and ensuring the data flows accurately and securely.
2. **Data Analyst / User:** The primary users who interact with the dashboard, analyse sales trends, product performance, and growth metrics. They rely on the dashboard to generate insights and report on business performance.
3. **Manager:** Managers can view high-level metrics and trends on the dashboard, including overall sales growth, category-wise performance, and regional performance.

Overview of Use Cases and Interactions

The Use Case Diagram for the Blinkit Sales and Growth Dashboard illustrates the system's various functions, each linked to a specific actor. These use cases outline the responsibilities of the Admin, Data Analyst/User, and Manager:

1. **Authenticate User:** Each actor must log in to the dashboard using secure credentials to access the data and dashboard features relevant to their role. This ensures that access is granted based on their specific permissions.
2. **View Sales and Growth Metrics:** Data analysts and managers can access and view key performance indicators (KPIs), sales reports, and growth trends that are visualized through interactive charts and graphs.
3. **Generate Reports:** Data analysts have the ability to generate custom reports based on selected time periods, categories, or product types, aiding in decision-making and strategic planning.
4. **Filter and Drill-down Data:** Users can interact with the data by applying filters and drilling down into detailed views. This helps to zoom into specific regions, products, or timeframes to gain deeper insights.
5. **Monitor Performance:** The Admin, Data Analyst, and Manager can track the performance of different product categories, sales trends, and growth over time. Dashboards offer real-time updates and visual feedback on business performance.

6. **Export Data:** Data analysts can export the analysed data or reports to CSV, Excel, or PDF formats for further offline analysis or sharing with other teams.
7. **Set Alerts and Notifications:** Admins and managers can configure automated alerts for when certain sales or performance thresholds are met, allowing for proactive decision-making.

Overview of Actors' Interactions with Use Cases

1. **Admin:**
    - Log In: The admin authenticates their identity through secure login credentials.
    - Manage User Roles: Admin can assign different access levels and privileges to Data Analysts or Managers based on their role and responsibilities.
    - Monitor System Access: Admin is responsible for overseeing all system users and ensuring secure access control across the dashboard.
    - Configure Alerts: Admin configures automated notifications or alerts for critical changes in the sales performance.
2. **Data Analyst/User:**
    - Log In: Data analysts log into the system to access the data visualizations and metrics.
    - View Sales and Growth Metrics: Data analysts can view the dashboard's interactive graphs, which show key sales and performance metrics over various periods.
    - Generate Custom Reports: They can generate custom reports, such as sales over time, product performance, or regional growth, and analyse the data.
    - Export Data: Data analysts can export relevant sales reports and performance data for further analysis or sharing with stakeholders.
    - Filter and Drill-down Data: Analysts can interact with the dashboard by filtering data and drilling down into specific metrics, products, or locations to gather deeper insights**.**
3. **Manager:**
    - Log In: Managers use the dashboard to gain access to business performance data.
    - View Sales and Growth Metrics: Managers can monitor key performance indicators, trends, and high-level data insights.

- Monitor Performance: Managers can assess various metrics such as growth rates, top-performing products, and regional sales to make informed decisions.
- Set Alerts: Managers can configure alerts related to important sales benchmarks or key product performance to stay updated on crucial developments.

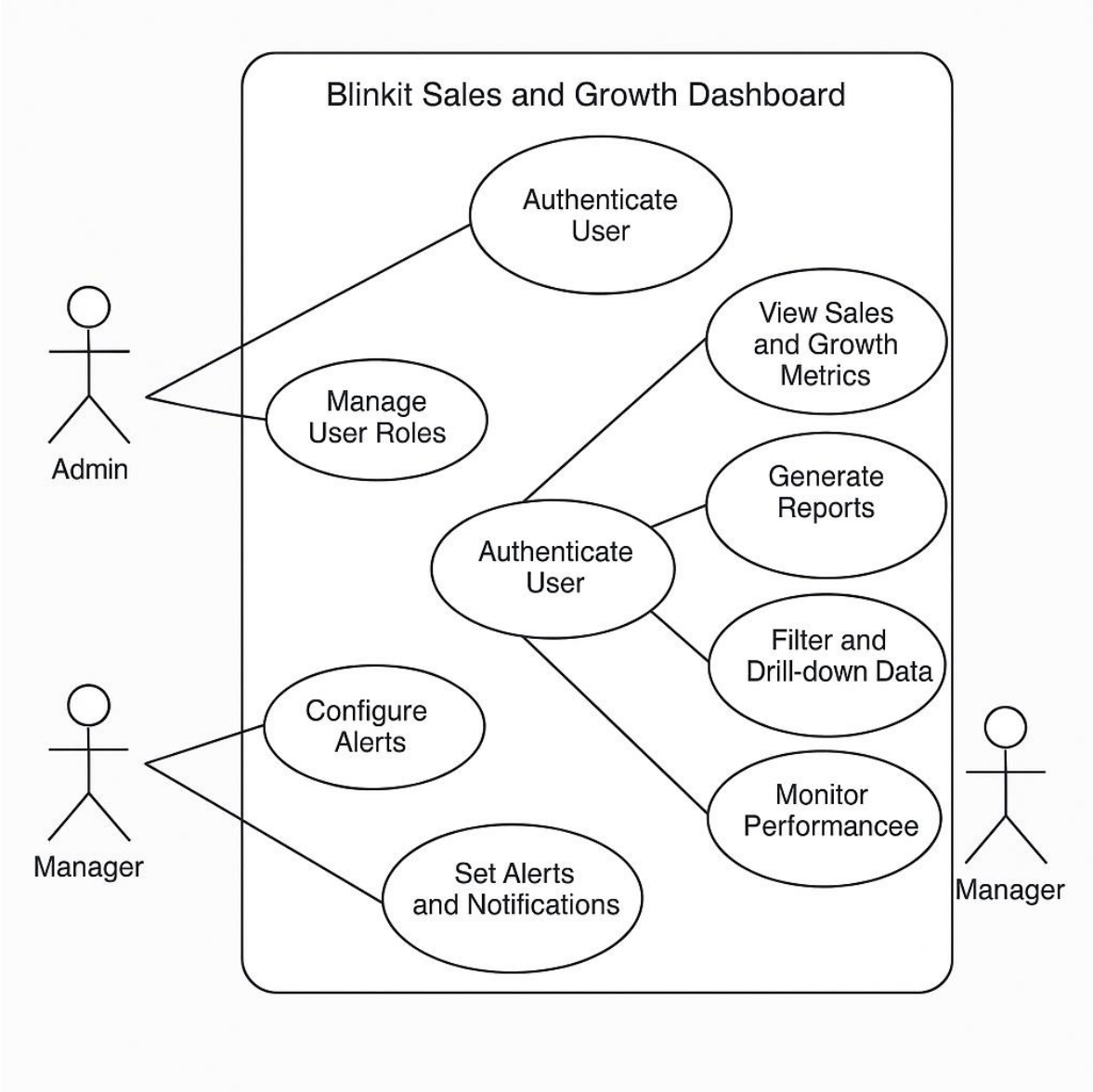

Figure 3.1 Use Case Diagram

3.4.2 Data Flow Diagram

Overview of Entities

The Blinkit Sales and Growth Dashboard interacts with several key external entities that contribute to data processing and visualization. These entities provide data, interact with dashboard components, and consume insights:

1. **Admin:** Oversees system operations, manages data access, and ensures accurate configuration of dashboards and datasets.
2. **Data Analyst**: Works directly with the dashboard to explore sales data, apply filters, and generate detailed analytical reports.
3. **Manager:** Accesses summarized performance data and sales insights to monitor company growth and make strategic decisions**.**

Overview of Processes and Data Flow

The system follows a structured flow of data through various components, enabling real-time analytics and interactive dashboards:

1. **(1) User Authentication & Access Control:** All users must securely log in to access the dashboard. Based on their role (Admin, Analyst, or Manager), users are granted different levels of visibility and interaction with the data visualizations.
2. **(2) Data Ingestion & Preparation:** Sales data from Blinkit (CSV, Excel, or API sources) is collected and imported into Power BI. This raw data is cleaned, transformed, and organized using Power Query and Power BI Dataflows.
3. **(3) Dashboard Interaction:** Once data is modelled and published, users interact with the dashboard by applying filters, slicing data, and drilling down into metrics such as sales volume, product performance, category-wise growth, and regional trends.
4. **(4) Report Generation & Insights:** Data Analysts can generate customized reports, export visuals, and extract growth metrics from the dashboard. Managers can view summary dashboards for decision-making and performance monitoring.

Overview of Datastores

1. **User Access Table:** Maintains user credentials and access permissions for each role. Ensures role-based access to dashboard views and filters.
2. **Sales Data Source:** This includes historical and real-time sales data exported from Blinkit's operational systems (via Excel, SQL, or API). Contains details like product ID, sales date, order volume, price, and location.

3. **Product & Category Dataset:** Stores product-level details including category, inventory status, and pricing. Enables category-wise filtering and trend analysis.
4. **Performance Metrics Repository:** A Power BI dataset that holds calculated measures like monthly revenue, top-selling products, growth rate, and customer behaviour trends. These are used in KPIs and visualizations.

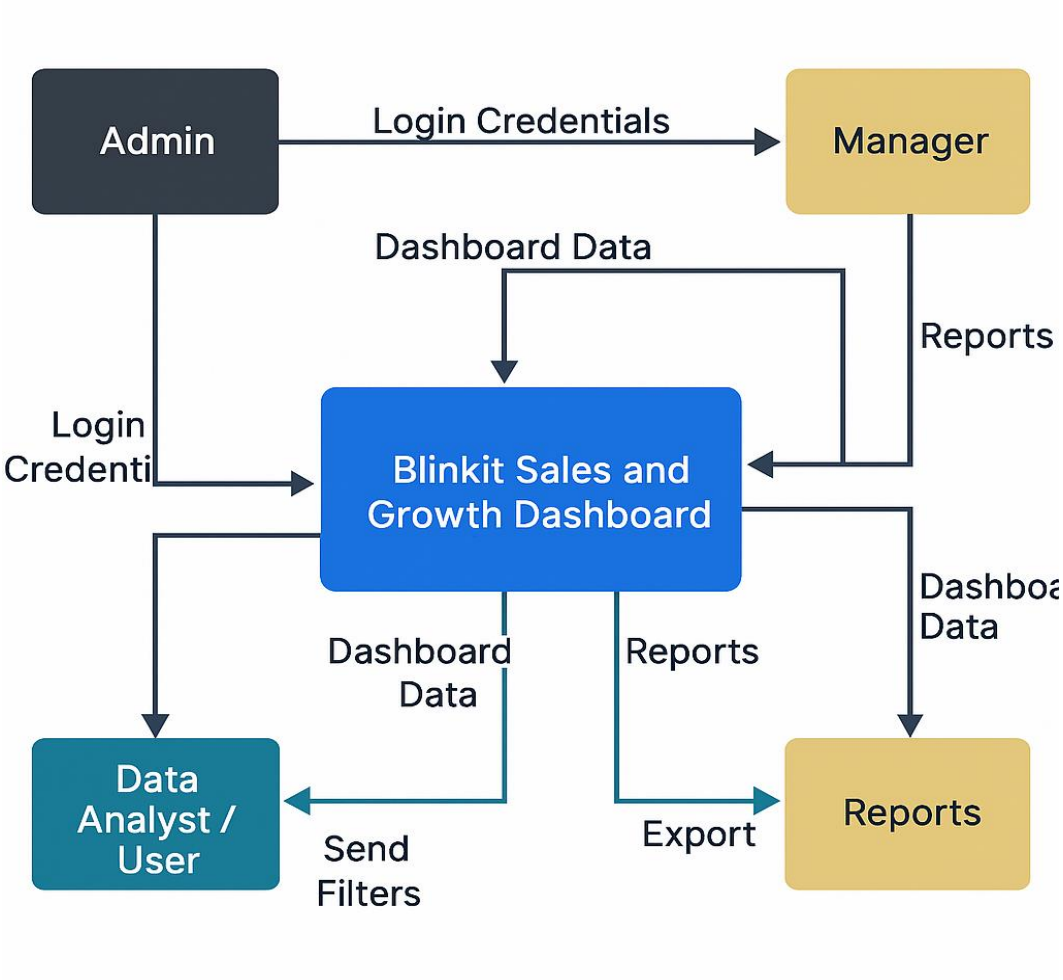

Figure 3.2 Data Flow Diagram

CHAPTER 4: DESIGN AND ARCHITECTURE

4.1 WORK BREAKDOWN STRUCTURE (WBS)

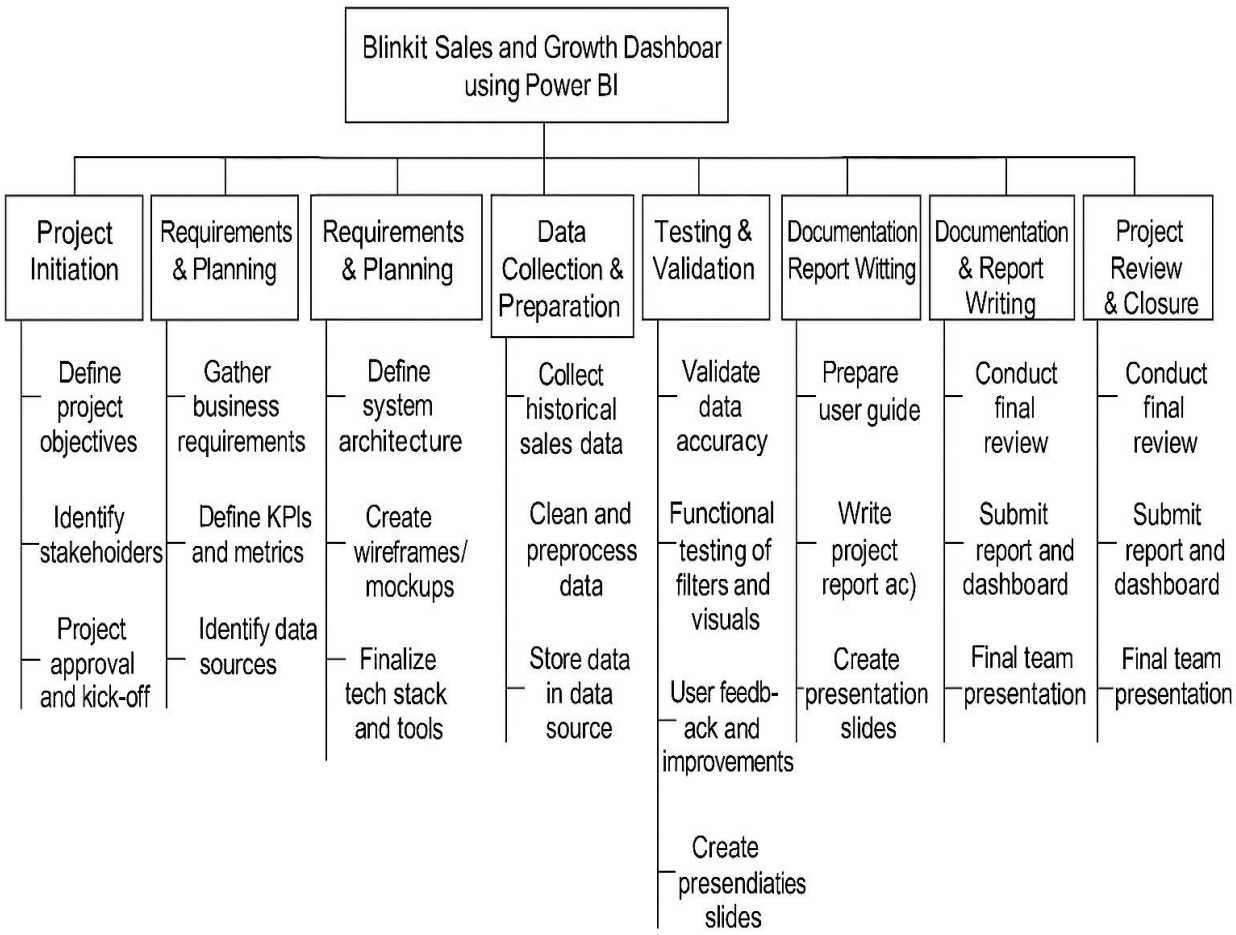

Figure 4.1 Work Breakdown Structure (WBS)

4.2 EXPLANATION OF MODULES

The *Blinkit Sales and Growth Dashboard* is structured into various modules, each serving a distinct analytical or operational purpose. These modules work together to process, visualize, and report on sales performance, helping stakeholders make informed decisions based on real-time and historical data.

1. Data Import & Preparation Module

- **Purpose**: To load raw sales data into Power BI from multiple sources such as CSV files, Excel sheets, or databases exported from Blinkit systems.
- **Key Features**:
    - Data cleaning and transformation using Power Query.
    - Merging datasets (e.g., products with sales records).
    - Removing nulls, duplicates, and correcting data types before modelling.

2. Data Modelling Module

- **Purpose**: Structures and relates datasets to enable effective data analysis and visualization.
- **Key Features**:
    - Establishes relationships between tables such as sales, products, categories, and regions.
    - Utilizes calculated columns and DAX measures to derive KPIs like total sales, monthly growth, and average order value.
    - Ensures optimal performance and query efficiency.

3. Dashboard & Visualization Module

- **Purpose**: Displays interactive charts, graphs, and tables that reflect Blinkit's sales trends and growth patterns.
- **Key Features**:
    - Bar charts, line graphs, pie charts, and KPI cards to represent metrics like revenue, units sold, top categories, and regional sales distribution.
    - Slicers and filters for dynamic analysis (e.g., by month, product, or location).
    - Drill-through and tooltip pages for deeper insights into any data point.

4. User Interaction Module

- **Purpose**: Facilitates user engagement with the dashboard through intuitive controls and role-based access.
- **Key Features**:
    - Enables role-based views: analysts can explore in detail, while managers get a summary overview.
    - Allows real-time filtering and interactive exploration of data trends.
    - Navigation buttons and bookmarks improve usability.

5. Sales Trend Analysis Module

- **Purpose**: Provides insights into historical and forecasted sales growth.
- **Key Features**:
    - Monthly, quarterly, and yearly comparison of sales figures.
    - Identification of high-performing and underperforming products or regions.
    - Trend lines and moving averages for forecasting future growth.

6. Performance Metrics Module

- **Purpose**: Tracks performance indicators critical to sales and business development.
- **Key Features**:
    - KPIs like total revenue, conversion rate, average basket size, and repeat purchase rate.
    - Visual indicators (e.g., arrows, colours) for growth or decline.
    - Real-time updates when new data is imported.

7. Report Export & Sharing Module

- **Purpose**: Enables users to export and share key insights in various formats.
- **Key Features**:
    - Export visuals and reports to PDF, Excel, or PowerPoint.
    - Integration with Power BI Service for cloud sharing and collaboration.

4.3 FLOW CHART

Overview of Flow and Functional Stages:

The following flow illustrates the step-by-step process used in the *Blinkit Sales and Growth Dashboard*. It begins with data ingestion, proceeds through analysis and transformation stages, and concludes with interactive visualization and decision-making.

1. Data Import and Connection:

- Start Point: The system initiates by connecting to external data sources (e.g., Excel files, databases, or CSV exports from Blinkit).
- Objective: Extract raw data related to sales, orders, customer details, and products.

2. Data Cleaning and Transformation:

- Performed in Power Query Editor
- Key Tasks:
    - Remove duplicates and null values.
    - Rename and restructure columns.
    - Merge related tables (e.g., product info with sales data).
    - Standardize formats (dates, currencies, etc.).

3. Data Modelling and Relationship Mapping:

- Objective: Establish logical relationships between tables for accurate analysis.
- Activities:
    - Link primary and foreign keys across datasets (e.g., ProductID in Sales and Product tables).
    - Define calculated columns and DAX measures (e.g., Total Revenue, Profit Margin, Average Order Value).

4. KPI Calculation and Trend Analysis:

- Purpose: Generate insights using dynamic measures.
- Examples:
    - Monthly sales growth rate.
    - Category-wise top-selling items.
    - Region-wise revenue distribution.

5. Dashboard and Visualization Layer:

- Role-Based Visualization Access:
    - Sales Team View: Focused on real-time sales figures and order volume.
    - Management View: Overview of growth metrics, strategic KPIs, and long-term trends.
- Components:
    - Line graphs, bar charts, maps, and pie charts.
    - Filters for date ranges, product categories, cities, etc.
    - Drill-down and tooltip functionality for deeper insight**.**

6. Exporting & Sharing Reports:

- Final Stage:
    - Export dashboards as PDFs, Excel sheets, or share via Power BI Service.
    - Schedule automatic refresh and reporting for weekly/monthly analysis.

Summarized Functional Stages by Role:

Data Analyst:

1. Connect to Blinkit sales data.
2. Perform data transformations.
3. Build relationships between datasets.
4. Define KPIs using DAX formulas.
5. Design and deploy dashboards.

Business Manager:

1. Access real-time sales trends.
2. Compare category and location performance.
3. Make informed decisions based on visual analytics.
4. Download/share reports for review.

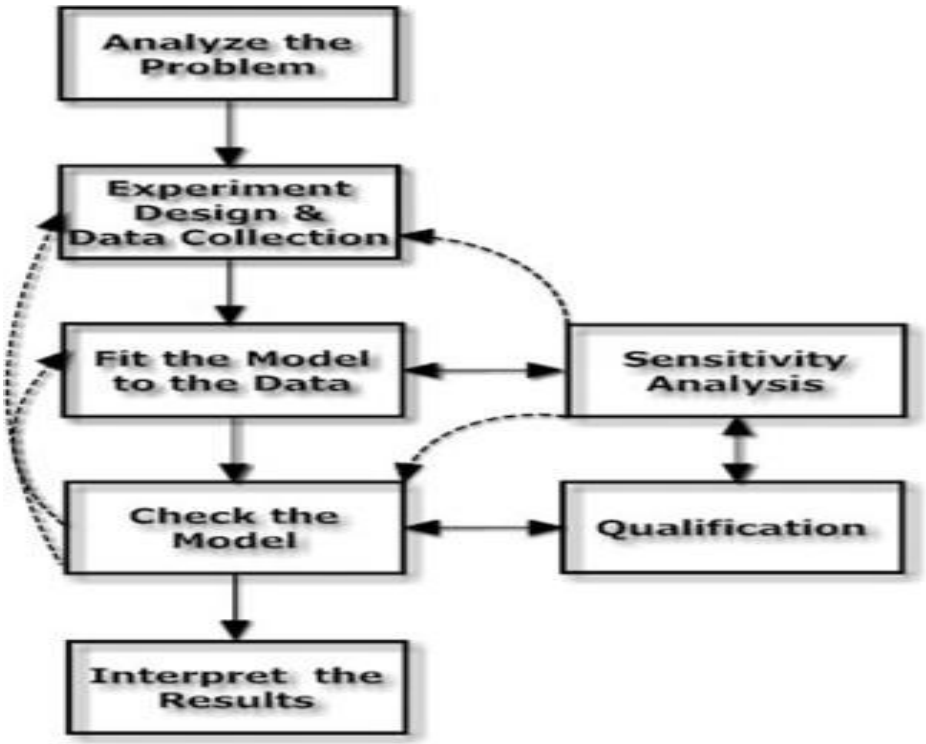

Figure 4.2 Flow Diagram

4.4 ENTITY RELATIONSHIP DIAGRAM

- **Overview of Entities:**

Products:

- **Attributes:** product_id (PK), product_name, brand, price, discount, category_id (FK), stock_level.
- **Purpose:** Captures all product-related information such as item name, pricing, brand details, and category.
- **Relationships:**
    - Each product belongs to one category.
    - One-to-Many relationship with Orders (a product can appear in many orders).

2. Categories:

- **Attributes:** category_id (PK), category_name, description.
- **Purpose:** Groups products into logical segments such as Beverages, Fruits, Personal Care, etc.
- **Relationships:**
    - One-to-Many with Products (a single category can contain multiple products).

3. Customers:

- **Attributes:** customer_id (PK), full_name, email, phone_number, gender, location, registration_date.
- **Purpose:** Holds demographic and contact information of Blinkit customers.
- **Relationships:**
    - One-to-Many with Orders (a customer can place multiple orders).

4. Orders:

- **Attributes:** order_id (PK), customer_id (FK), order_date, total_amount, payment_mode, delivery_status, region_id (FK).
- **Purpose:** Tracks each transaction including amount, payment type, and order status.
- **Relationships:**

- Many-to-One with Customers.
- Many-to-Many with Products through a junction table (Order_Details).
- Belongs to a Region for regional analysis.

5. Order_Details (Junction Table):

- **Attributes:** order_id (FK), product_id (FK), quantity, unit_price, total_price.
- **Purpose:** Connects Orders and Products in a normalized structure for many-to-many relationships.
- **Relationships:**
  - Composite relationship with Orders and Products.
  - Enables tracking of product-level revenue and quantity per order.

6. Regions:

- **Attributes:** region_id (PK), region_name, city, zone.
- **Purpose:** Categorizes orders by geographic zones (e.g., North, South, Metro, Tier-2).
- **Relationships:**
  - One-to-Many with Orders.

Summary of Relationships & Data Flow:

- **Products ↔ Categories:** Each product is grouped under one category, aiding category-wise sales analysis.
- **Orders ↔ Customers:** Customers can place multiple orders, which helps in tracking customer lifetime value and retention metrics.
- **Orders ↔ Products (via Order_Details):** Captures item-level purchase insights like most sold products or high-revenue items.
- **Orders ↔ Regions:** Regional segmentation enables location-based analysis like top-performing zones.
- **Sales Trends & KPIs:** Derived from Orders, Products, and Order_Details using DAX measures in Power BI.

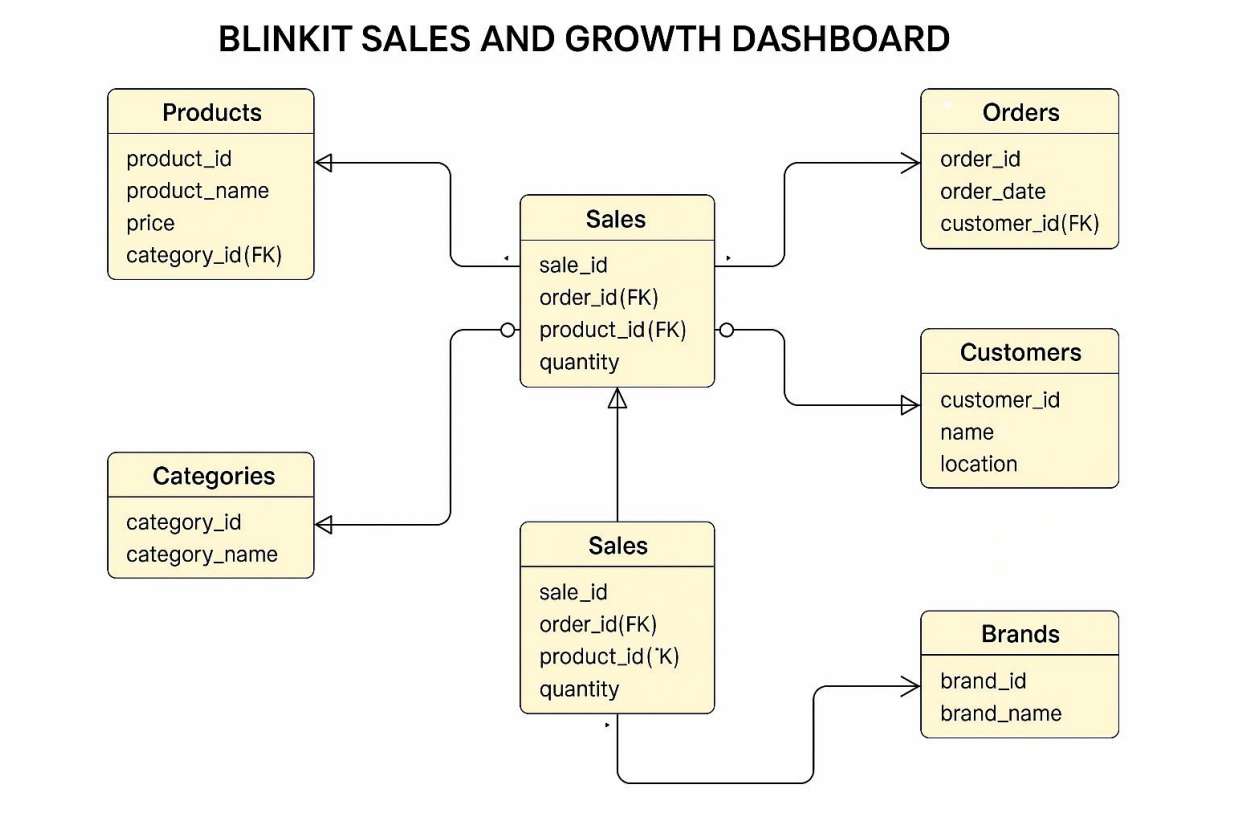

Figure 4.3 Entity Relationship Diagram

CHAPTER 5: IMPLEMENTATION

5.1 SCREENSHOTS

Tier 2 Outlet Locations – Small-Sized Outlets

The image below illustrates the first visual from the *Blinkit Sales and Growth Dashboard*, focusing on Blinkit's small-sized outlets located in Tier 2 cities. This section of the dashboard highlights how the brand is expanding its presence beyond metropolitan areas, targeting developing urban regions with smaller, efficient store setups.

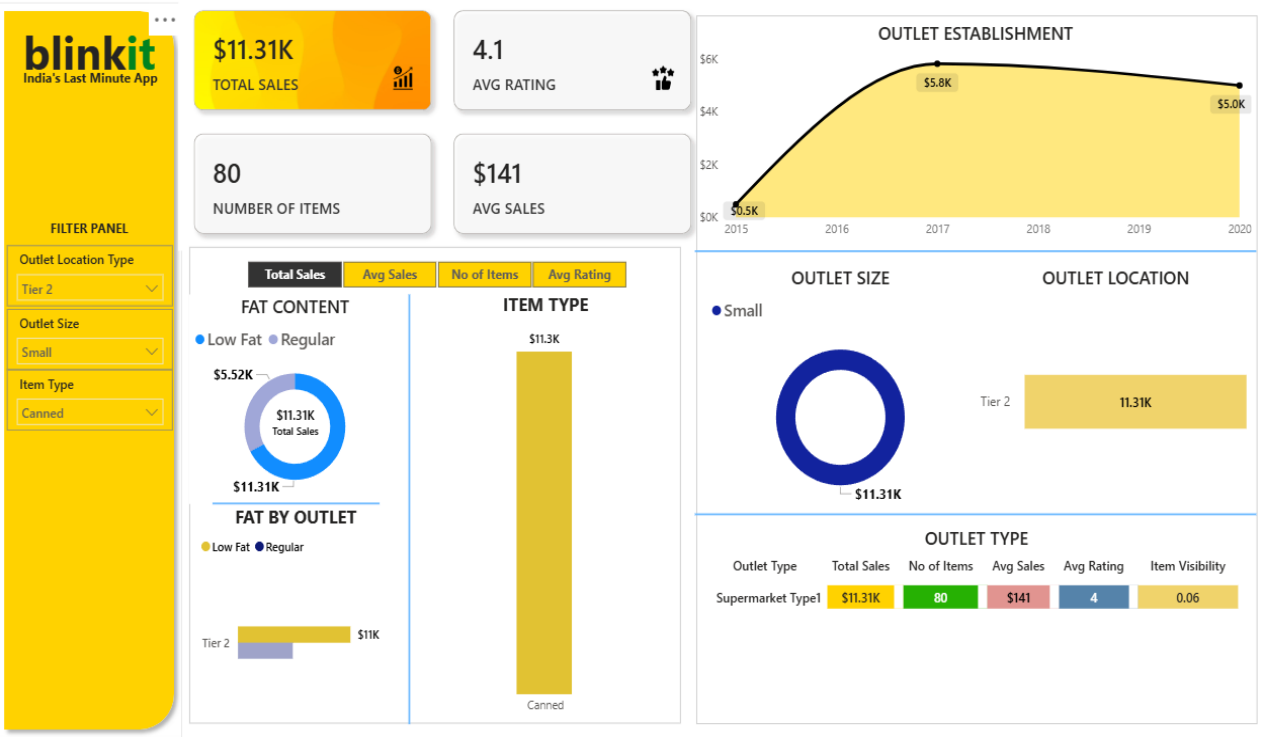

Figure 5.1 Tier 2 Outlet Locations – Small-Sized Outlets

Product-Wise Growth and Sales Across All Tier Locations

This visual showcase the core functionality of the *Blinkit Sales and Growth Dashboard*—analysing the sales performance and growth metrics of all products across Tier 1, Tier 2, and Tier 3 locations. It provides a comprehensive overview of how different product categories are performing in diverse geographical segments.

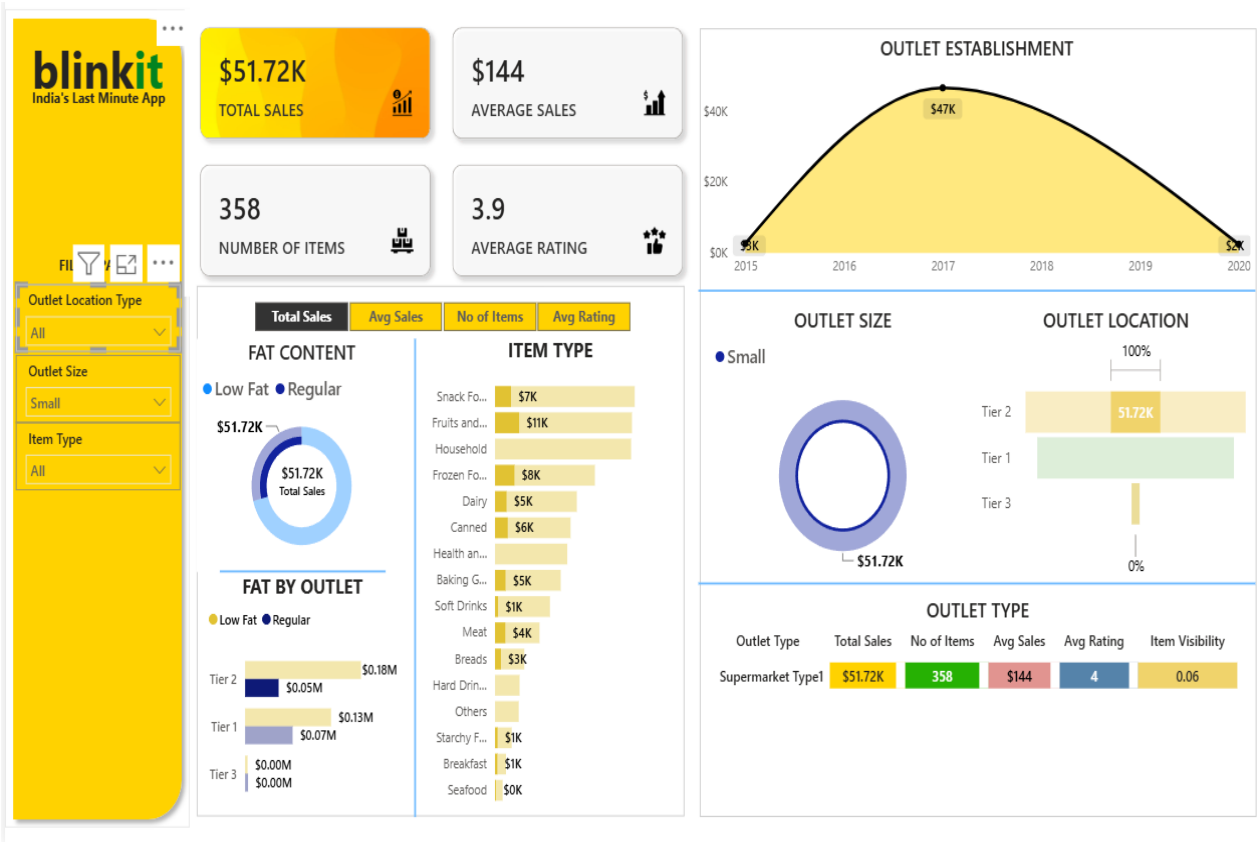

Figure 5.2 HR Dashboard

5.2 SOURCE CODE OF SOME MODULES

This section explains the practical implementation of the Blinkit Sales and Growth Dashboard using Power BI, focusing on data visualization, transformation, and insight generation.

Tools & Technologies Used

- **Power BI Desktop**: Primary tool for visualization and report building.
- **Power Query Editor**: Used for cleaning and transforming raw sales data.
- **DAX (Data Analysis Expressions)**: Utilized for creating custom measures and calculated columns.
- **CSV Dataset**: Imported as the source file containing all sales and outlet-related data.

Dataset Description

The dataset consists of structured records from Blinkit's retail operations, including sales performance across various outlets. The key fields used include:

- Item Fat Content: Nutritional information (e.g., Low Fat, Regular).
- Item Identifier: Unique code representing each item.
- Item Type: Classification (e.g., Dairy, Soft Drinks, Household).
- Item Visibility: Percentage visibility of items in stores.
- Item Weight: Net weight of products.
- Sales: Final sales value for each item.
- Rating: Customer satisfaction or internal quality rating.
- Outlet Establishment Year: Year each outlet began operations.
- Outlet Identifier: Unique store ID.
- Outlet Location Type: Tier 1, Tier 2, or Tier 3 based on location.
- Outlet Size: Physical size (Small, Medium, High).
- Outlet Type: Store type (e.g., Grocery Store, Supermarket Type 1/2).

Screenshots and Implementation Insights

1. Tier 2 Outlet (Small Size) Dashboard View

- **Purpose**: Analyse sales performance specifically for Tier 2 cities with small outlet size.

- **Visualizations Used**: Bar charts, KPIs, and cards focused on revenue and product distribution.
- **Insights**: Highlights how space-limited outlets perform and which products are more profitable in Tier 2 segments.

2. Overall Sales and Growth Across All Tiers

- **Purpose**: Monitor performance of all products across all tiered locations.
- **Visuals Used**: Clustered column charts, pie charts, and trend lines.
- **Features**: Drill-down enabled for product and outlet-level analysis.
- **Insights**: Helps decision-makers track growth trends and sales by geography and outlet type.

Data Preparation in Power Query

Before visualization, the dataset was cleaned and transformed:

- Removed null or missing values.
- Changed data types (e.g., from text to decimal).
- Created conditional columns for better categorization.
- Standardized formats for fields like Item Type, Outlet Size, and Rating.

DAX Measures and Calculations

Key DAX formulas created:

DAX

CopyEdit

```
Total Sales = SUM('Sales'[Sales])


Average Rating = AVERAGE('Sales'[Rating])


Sales by Tier 2 = CALCULATE([Total Sales], 'Sales'[Outlet Location Type] = "Tier 2")


Sales Growth % =
   DIVIDE(
      ([Total Sales] - [Previous Period Sales]),
      [Previous Period Sales],
```

0

)

These measures allow dynamic calculation of sales, performance ratios, and comparative analysis across time and location types.

Filters and Interactivity

- **Slicers**: Enabled for Item Type, Outlet Size, and Location Type to refine insights.
- **Drill-through Pages**: Clicking on specific item types or tiers shows deeper data per product or outlet.
- **Tooltips**: Display contextual data like Item Weight, Visibility, and Rating on hover.

CHAPTER 6: SOFTWARE TESTING

6.1 TESTING APPROACH

To ensure accuracy, usability, and robustness of the Blinkit Sales and Growth Dashboard, various testing techniques were applied during development. The focus was on verifying data correctness, dashboard interactivity, performance under load, and user experience.

1. **Unit Testing**
    - **Purpose**: Validate each calculated metric, DAX expression, and individual visual elements (e.g., KPIs, graphs).
    - **Outcome**: Confirmed all formulas and visuals computed and displayed the correct values independently.
2. **Integration Testing**
    - **Purpose**: Ensure smooth interaction between datasets, Power BI transformations, and linked visual components.
    - **Outcome**: Verified that multiple data sources (e.g., sales, customer, inventory) were seamlessly combined and reflected accurate outputs in related visuals.
3. **Functional Testing**
    - **Purpose**: Simulate end-user interactions such as applying filters, drilling down through data, and generating period-wise reports.
    - **Outcome**: Ensured that all filters, slicers, and navigation buttons worked correctly and dynamically updated visual components.
4. **Performance Testing**
    - **Purpose**: Evaluate dashboard load time and responsiveness with a growing dataset or high query volume.
    - **Outcome**: The dashboard maintained optimal load times and did not lag even with large-scale transaction data.
5. **Edge Case Testing**
    - **Purpose**: Handle unexpected scenarios such as missing data, null values, or extremely high/low sales figures.
    - **Outcome**: Implemented default placeholders and alerts to manage such cases without breaking visualizations.

6. **User Acceptance Testing (UAT)**
    - **Purpose**: Collect feedback from intended stakeholders like sales managers and business analysts.
    - **Outcome**: Users found the dashboard intuitive, with clear data insights and valuable drill-down capabilities.
7. **Regression Testing**
    - **Purpose**: Ensure that dashboard changes or feature additions didn't disrupt existing reports or visuals.
    - **Outcome**: All pre-existing charts and calculations retained their accuracy after enhancements.

6.2 TEST CASE DESIGN

- **Sales Data Accuracy Validation**
    - **Objective**: Ensure accurate representation of total, daily, and category-wise sales figures.
    - **Input**: Processed transactional sales data.
    - **Expected Output**: Correctly calculated metrics in visuals.
    - **Pass Criteria**: Visuals reflect accurate sales data matching the backend dataset.
- **Filter and Slicer Functionality**
    - **Objective**: Test responsiveness of filters (e.g., by date, category, region).
    - **Input**: User selects various filter combinations.
    - **Expected Output**: Corresponding visuals update dynamically.
    - **Pass Criteria**: All related visuals adjust instantly and appropriately.
- **KPI Cards Verification**
    - **Objective**: Validate key metrics like total revenue, order volume, and customer count.
    - **Input**: Static and real-time data inputs.
    - **Expected Output**: KPI cards display current and past performance data.
    - **Pass Criteria**: Values reflect backend logic and user-selected filters.
- **Trend and Comparative Analysis**
    - **Objective**: Check correctness of time-series and comparison graphs.
    - **Input**: Sales data across multiple periods.
    - **Expected Output**: Accurate line charts, bar graphs, and YoY/Month-on-Month visuals.

- **Pass Criteria**: Charts show expected trends and correct percentage changes.

- **Error Handling and Null Values**

  - **Objective**: Manage null, missing, or abnormal values in the dataset.
  - **Input**: Incomplete or outlier data points.
  - **Expected Output**: Placeholder messages or alternative visuals without error pop-ups.
  - **Pass Criteria**: Dashboard remains functional with clear user feedback.

- **Data Refresh & Sync Testing**

  - **Objective**: Test accuracy of scheduled or manual data refresh.
  - **Input**: New data added to the source.
  - **Expected Output**: Refreshed visuals reflecting the updated data.
  - **Pass Criteria**: No data mismatch or refresh errors post-synchronization.

6.3 MODIFICATIONS AND IMPROVEMENTS

1. **Optimized DAX Measures**
   - Refined DAX expressions to reduce processing time and avoid redundant calculations.
2. **Enhanced Visual Interactivity**
   - Improved the interactivity of charts by enabling drill-through and tooltips for detailed insights.
3. **Responsive Design Elements**
   - Adjusted layout for different screen sizes and resolutions to maintain visual consistency.
4. **Automated Data Refresh Scheduling**
   - Enabled periodic data refresh and integrated Power BI Service for real-time reporting.
5. **Advanced Error Management**
   - Implemented data validation rules and visual alerts for missing or inconsistent data.
6. **Modular Page Navigation**
   - Separated dashboard into logical sections (e.g., Overview, Product Performance, Region-wise Sales) for clarity and scalability.
7. **Scalability Improvements**
   - Structured data model and report layers to allow future expansion for metrics like customer satisfaction or delivery performance.

CHAPTER 7: SUMMARY AND CONCLUSIONS

7.1 SUMMARY OF THE PROJECT

The Blinkit Sales and Growth Dashboard is an interactive business intelligence solution developed using Microsoft Power BI. Its primary objective is to provide comprehensive insights into Blinkit's sales performance, customer satisfaction, and inventory distribution. By transforming raw data into actionable visualizations, the dashboard enables stakeholders to make informed decisions and optimize business strategies.

Key Features:

- **Sales Performance Analysis:** The dashboard presents total sales, average sales per transaction, and the number of items sold, offering a clear view of overall revenue generation.
- **Customer Satisfaction Metrics:** Incorporates average customer ratings to assess satisfaction levels across different products and outlets.
- **Inventory Distribution:** Analyses item types, fat content distribution, and outlet characteristics to understand inventory dynamics.
- **Interactive Filtering:** Users can filter data by outlet location type, outlet size, and item type, allowing for tailored analyses.The dashboard replaces traditional, fragmented reporting methods, offering a centralized platform for real-time data analysis and decision-making.

7.2 KEY LEARNINGS AND INSIGHTS

Technical Proficiencies Gained:

- **Data Transformation:** Utilized Power Query for data cleaning and transformation, ensuring data quality and consistency.
- **Data Modelling:** Established relationships between datasets to facilitate accurate and efficient data analysis.

- **DAX Calculations:** Developed measures and calculated columns using DAX to compute KPIs such as total sales, average sales, and average ratings.
- **Visualization Techniques:** Designed intuitive visualizations, including bar charts, pie charts, and line graphs, to represent data effectively.

Analytical Insights:

- **Product Performance:** Identified top-performing item categories, such as fruits and vegetables, and snack foods, contributing significantly to total sales.
- **Outlet Analysis:** Determined that medium-sized outlets in Tier 3 locations generated the highest sales, indicating potential areas for expansion.
- **Customer Preferences:** Observed a higher preference for low-fat products, suggesting a trend towards health-conscious purchasing behaviour.

Professional Development:

- **Project Management:** Gained experience in managing a data analysis project from inception to completion, including requirement gathering, development, and presentation.
- **Collaboration:** Enhanced skills in collaborating with stakeholders to understand business needs and deliver actionable insights.

7.3 OVERALL PROJECT OUTCOME

The Blinkit Sales and Growth Dashboard successfully meets its objectives by providing a comprehensive, user-friendly platform for analysing sales data. It empowers stakeholders to monitor performance metrics, understand customer behaviour, and make data-driven decisions.

Benefits Realized:

- **Enhanced Decision-Making:** Facilitates strategic planning by providing insights into sales trends, customer preferences, and inventory distribution.
- **Operational Efficiency:** Streamlines the analysis process, reducing the time and effort required to compile and interpret sales reports.

- **Scalability:** The modular design allows for easy integration of additional data sources and metrics, ensuring the dashboard remains relevant as business needs evolve. In conclusion, the project not only achieved its intended goals but also provided valuable learning experiences in data analysis, visualization, and business intelligence, laying a strong foundation for future analytical endeavours.

CHAPTER 8: LIMITATION OF THE PROJECT AND FUTURE WORK

8.1 LIMITATIONS OF THE PROJECT

The Blinkit Sales and Growth Dashboard offers valuable insights into sales performance, customer behavior, and business growth. However, during development and testing, several limitations were identified:

1. **Restricted User Roles and Access**

Currently, the dashboard is accessible only to specific roles such as Sales Managers, Business Analysts, and Regional Heads. This restriction limits the ability of other potential users, like general employees, to interact with or access the dashboard, thereby reducing overall user engagement and flexibility.

2. **Web-Only Accessibility**

The dashboard is designed for web browsers and lacks a dedicated mobile application. This limitation hinders users who prefer or require mobile access to monitor sales data and trends while on the move.

3. **Absence of Real-Time Notifications**

There is no functionality for real-time alerts concerning critical metrics such as sales targets, customer behavior trends, or inventory levels. Without timely notifications, users might miss crucial updates that could impact decision-making.

4. **Manual Data Entry and Updates**

Data inputs and updates are performed manually through the backend, which can lead to delays or inaccuracies in data representation. The lack of dynamic data updating mechanisms means the dashboard may not always reflect the most current information.

5. **Limited Advanced Analytics**

While the dashboard provides essential sales and growth insights, it lacks advanced analytical features like predictive modelling, trend analysis, or in-depth customer behaviour analysis. This limitation restricts its utility for more sophisticated decision-making processes.

6. **No Integration with External Systems**

The dashboard operates independently and is not integrated with other business tools or systems such as inventory management or Customer Relationship Management (CRM) platforms. This isolation can lead to data silos and hinder comprehensive data analysis across departments.

7. **Dependence on Stable Internet Connectivity**

The dashboard requires a stable internet connection for real-time data access. In scenarios where internet connectivity is unstable or unavailable, users cannot interact with the dashboard, potentially disrupting business operations.

8.2 FUTURE WORK

To overcome the aforementioned limitations and enhance the dashboard's functionality, the following future developments are proposed:

1. **Development of Mobile Applications**

Creating dedicated mobile applications for iOS and Android platforms will enable users to access the dashboard anytime and anywhere, enhancing flexibility and real-time decision-making capabilities.

2. **Expansion of User Roles and Access**

Introducing a broader range of user roles with customizable permissions will allow more employees to interact with the dashboard, fostering greater inclusivity and collaboration across the organization.

3. **Implementation of Real-Time Alerts**

Incorporating real-time notification systems for key metrics will ensure users receive timely updates, facilitating prompt responses to critical business changes.

4. **Automation of Data Updates**

Integrating automated data syncing from external sources like CRM systems or sales channels will minimize manual data entry, ensuring the dashboard consistently reflects the most current information.

5. **Integration with External Business Systems**

Connecting the dashboard with other business tools, such as inventory management and CRM platforms, will create a unified system, enhancing data consistency and providing a holistic view of business operations.

6. **Incorporation of Advanced Analytics**

Adding features like predictive analytics, trend forecasting, and deep customer behavior analysis will empower users with deeper insights, supporting more informed and strategic decision-making.

7. **Offline Access Capability**

Developing offline functionality will allow users to interact with the dashboard without an internet connection, with data synchronization occurring once connectivity is restored, ensuring continuous access to critical information.

8. **Enhanced Customization Options**

Allowing users to personalize their dashboard views, including custom filters and adjustable data visualizations, will cater to individual preferences and departmental needs, improving user engagement and satisfaction.

9. **Automated Role Management**

Implementing a dynamic role assignment feature within the user interface will simplify the process of assigning roles and permissions, reducing reliance on backend configurations and enhancing administrative efficiency.

10. **Improved File Handling and Validation**

Enhancing the file upload system to support bulk uploads, format verification, and security checks will streamline data management processes and ensure the integrity of uploaded information.

11. **Integration with Human Resource Systems**

Linking the dashboard with HR management solutions will facilitate seamless information sharing, promoting better coordination and workflow management within the organization.

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Upendra Pandey

Blinkit Sales and Growth Dashboard using Power BI

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