



DATA ANALYTICS & VISUALIZATION USING POWER BI

Moe Htet Min



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Data Analytics & Data Visualization Project

1. Introduction Business Intelligence (BI) enables organizations to transform raw data into actionable insights through data analysis, visualization, and predictive analytics. This project focuses on using **Power BI and Excel** to analyze business performance, enhance decision-making, and optimize operations. The analysis is applied to a **café business**, leveraging data to improve revenue tracking, customer behavior insights, and inventory forecasting.

2. Project Overview

- **Tools Used:** Power BI, Excel
- **Data Sources:** Imported structured business data from Excel into Power BI for advanced analysis.
- **Objectives:**
 - Develop interactive dashboards for revenue and operational analysis.
 - Implement data visualization techniques to enhance decision-making.
 - Apply ETL (Extract, Transform, Load) processes for data cleaning and integration.
 - Perform trend analysis and forecasting using historical data.
 - Optimize café operations through BI-driven insights.

3. Key Features & Implementation

Data Integration & Cleaning

- Applied **ETL techniques** to structure and preprocess raw data for analysis.
- Standardized and cleaned datasets using Excel before importing into **Power BI**.
- Integrated **sales, customer transactions, and inventory data** from the café business.

Data Visualization & Dashboards

- Designed interactive **financial and operational dashboards** featuring:
 - **Pie Charts & Bar Graphs** for revenue trends and expense management.
 - **Stacked Bar Charts** for customer segmentation and purchasing behavior analysis.
 - **Line Graphs** to track peak business hours and optimize staffing.
 - **Inventory Monitoring Dashboards** to manage stock levels and reduce waste.
- Used **slicers and filters** to allow real-time data exploration.

Business Insights & Forecasting

- Conducted **trend analysis** to identify peak revenue periods and cost-saving opportunities.
- Applied **forecasting models** using historical café sales data to predict future demand.
- Evaluated customer **behavior patterns**, including preferred menu items and busiest hours, to improve service efficiency.
- Developed **pricing and promotional strategies** based on data-driven insights.

Security & Role-Based Access

- Implemented **role-based access control** to ensure secure data access.
- Followed BI security standards to maintain data integrity and compliance.

4. Key Outcomes

- Enhanced **decision-making** through clear, interactive reports.
- Provided **data-driven insights** to optimize revenue and cost strategies for the café business.
- Improved **inventory and resource planning** through forecasting models.
- Increased **customer satisfaction** by analyzing behavior trends and adjusting service offerings.

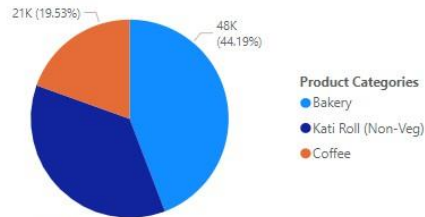
5. Technologies Used

- **Power BI:** Data visualization and dashboard development.
 - **Excel:** Data preprocessing, cleaning, and initial analysis.
 - **ETL Processes:** Data transformation for better analysis.
 - **Data Visualization Techniques:** Pie charts, bar graphs, line charts, interactive filter
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Revenue Analysis by Month and Product Categories Using Power BI

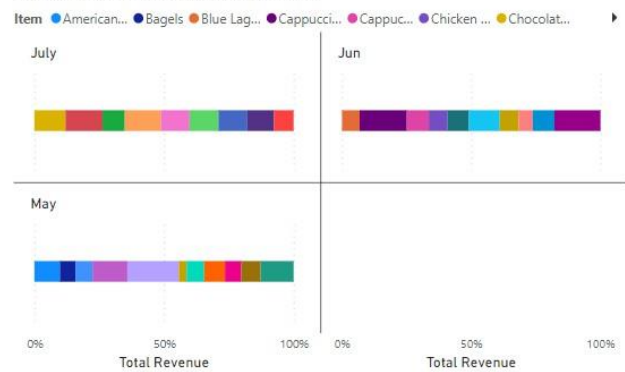
Lowest and Highest Revenues in different months

Total Revenue by Product Categories



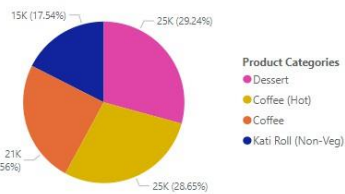
Month
☐ Select all
☒ July
☐ Jun
☐ May

Total Revenue by Month , Item and Month



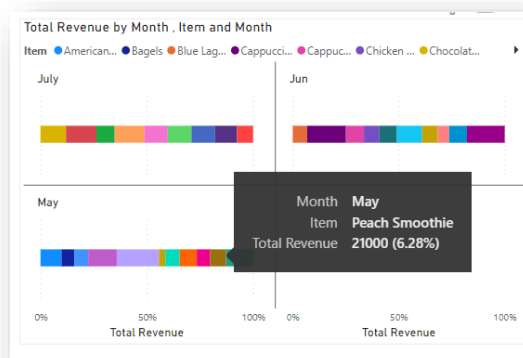
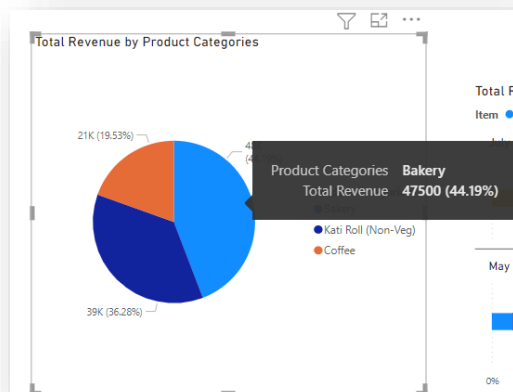
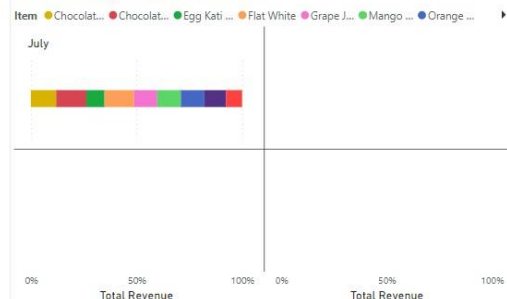
Lowest and Highest Revenues in different months

Total Revenue by Product Categories

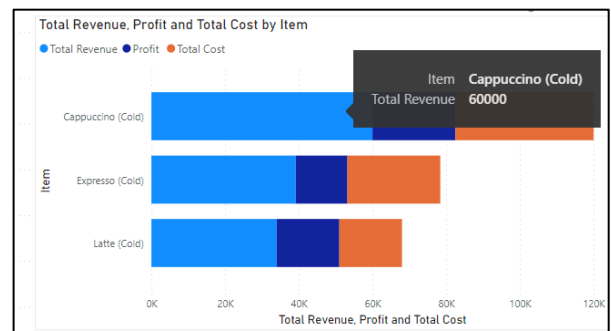


Month
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☐ May

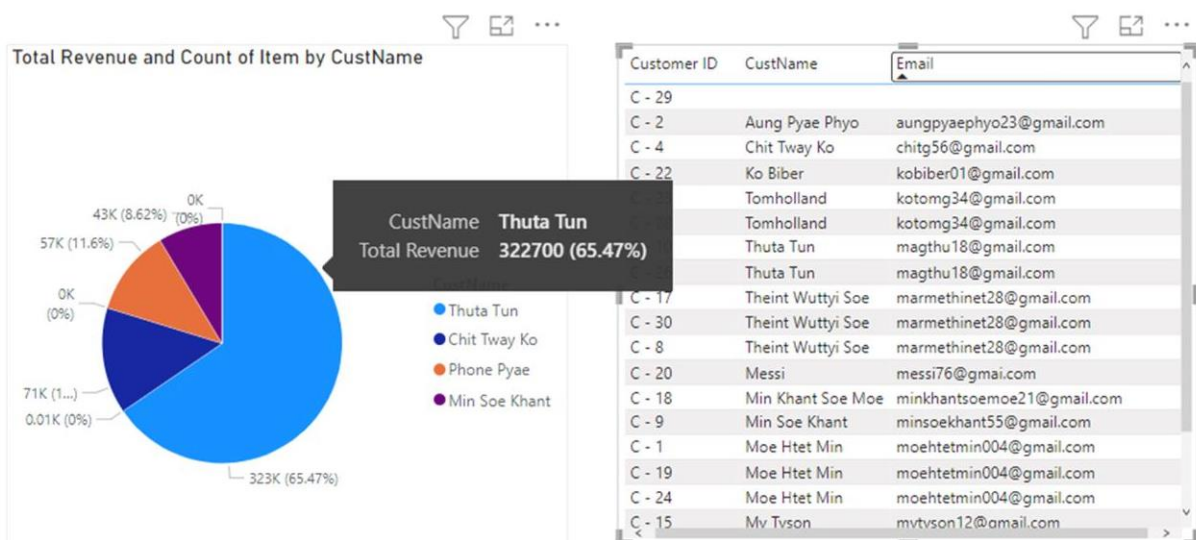
Total Revenue by Month , Item and Month



Comprehensive Financial Breakdown by Item



Customer Revenue Insights

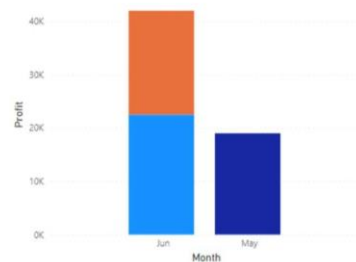
Customer Report with revenue

Leading Products by Profit Performance

Top 3 Products with Profit

Profit by Month and Item

Item: Cappuccino (Cold), Kiwi Apple Smoothie, Pan Grilled Prawn



Item, Profit

- ☐ Select all
- ☐ Americano (Cold)
- ☐ 16500
- ☐ Bagels
- ☐ 10000
- ☐ Blue Lagoon Smoothie

Profit by Month and Item

Item: Cappuccino (Cold), Kiwi Apple Smoothie, Pan Grilled Prawn



Profit by Month and Item

Item: Cappuccino (Cold), Kiwi Apple Smoothie, Pan Grilled Prawn



Profit by Month and Item

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