

MAKERERE UNIVERSITY BUSINESS SCHOOL
FACULTY OF BUSINESS ADMINISTRATION
MASTER OF BUSINESS ADMINISTRATION
SEMESTER 1, ACADEMIC YEAR 2025/ 2026
MBA8172: Data Science for Business Intelligence
SEMESTER ASSIGNMENT

Project Title:

“Data Analytics with Predictive Insights for Business Intelligence”

Project Overview:

The goal is to develop a **data-driven BI dashboard** while also performing **predictive analytics** using regression and classification. Students will:

- Analyse historical data that includes sales and customers.
- Build predictive models to forecast sales and classify customers
- Present actionable business insights through dashboards

Learning Objectives:

1. Clean, preprocess, and transform business datasets.
2. Perform **Exploratory Data Analysis (EDA)** and data summarization.
3. Use **pivot tables, charts, and advanced Excel functions**.
4. Build **regression models** for sales forecasting.
5. Build **classification models** for customer segmentation.
6. Create an interactive **dashboard** for management reporting.

Project Tasks / Steps:

1. Data Collection & Preparation

Collect / find a dataset that contains the following information (kaggle.com)

- **Sales Data such as** Transaction date, product, quantity, revenue, region.
- **Customer Data such as** Age, gender, location, items purchased, etc.

Clean datasets, convert categorical data to numerical, handle missing values.

2. Exploratory Data Analysis (EDA)

- Compute descriptive statistics (mean, median, variance).
- Visualize trends using histograms, line charts, and scatter plots.
- Identify correlations and outliers.

3. Pivot Tables & Charts

- Summarize sales by product, region, and time period.
- Segment customers using pivot tables.
- Create charts for revenue trends, top products, and customer demographics.

4. BI Dashboards

- Conditional formatting to highlight KPIs (top-selling products, high-value customers).
- Build an interactive dashboard with filters (region, product, customer segment).

5. Regression Tasks (Sales Forecasting)

- **Objective:** Predict future sales based on historical data.

- **Approach:**
 - Features: Month, product category, region.
 - Target: Sales revenue.
 - Methods: Linear regression or multiple regression.
- **Output:**
 - Forecast sales for the next quarter.
 - Visualize actual vs predicted sales in dashboard.

6. Classification Tasks (Customer Segmentation)

- **Objective:** Classify customers into categories (e.g., High-Value, Medium, Low-Value)
- **Approach:**
 - Features: Age, gender, purchase frequency, average spend.
 - Target: Customer category.
 - Methods: use Excel VLOOKUP, INDEX-MATCH functions.
- **Output:**
 - Customer categories/segments.
 - Segment visualizations in dashboard for targeted marketing strategies.

7. Insights & Recommendations

- Identify **top-performing products/regions**.
- Highlight **customer segments**.
- Forecasted sales and revenue growth opportunities.
- Strategic recommendations for marketing, inventory, and customer retention.

Deliverables:

1. Cleaned dataset (Excel/CSV).
2. Pivot tables and charts summary. (Excel)
3. Regression and classification model outputs (Excel).
4. Interactive BI dashboard (Excel).
5. Project report with visualizations, model explanations, and business recommendations.

Evaluation Criteria:

Criterion	Weight (%)
Data Cleaning & Preparation	10
EDA & Pivot Analysis	20
Regression Model & Forecasting	10
Classification Model & Segmentation	10
Dashboard Design & Visualization	30
Business Insights & Recommendations	20
Total	100

Submit via mubsep by 14th November 2025