

Retail Customer Retention Analytics – TESCO

Project Overview:

TESCO, a retail leader in the UK, operates across multiple cities through superstores, express outlets, and online channels. With growing competition and changing customer expectations, customer retention has become increasingly difficult. Although TESCO has access to rich data on customer transactions, store performance, and loyalty programs, their current reporting system lacks the analytical depth needed to:

- Understand why customers are churning?
(Customer churn, the rate at which customers stop doing business with a company)
- Identify high-value customers and those at risk.
- Evaluate the impact of loyalty tiers and promotions.
- Guide store-specific retention strategies

You are hired as a Power BI Analyst to build a Customer Retention Dashboard that brings together siloed data and delivers real-time, actionable insights.

Project Objective: Develop a robust, Interactive Customer Retention Analytics Dashboard in Power BI using the provided data, which will:

- Consolidate customer demographics, transaction history, store performance, and loyalty program usage.
- Enable dynamic segmentation of high-value, repeat, and churned customers.
- Offer actionable insights for improving retention, loyalty program effectiveness, and regional store strategies.

(If you're unfamiliar with concepts like churn rate, CLV, or other domain-specific terms, feel free to take the help of Google or AI tools like ChatGPT or Gemini to understand them better and apply them effectively in your project.)

Dataset Description:

1. [Customer_Demographics.csv](#): Contains demographic and membership details for each TESCO customer. Used to segment customers based on age, gender, region, income level, and membership tenure.

Column Name	Data Type	Description
Customer_ID	Text	Unique identifier for each customer
Gender	Text	Gender of the customer (Male/Female)
Age	Whole Number	Customer's age in years
Membership_Sin	Date	Date the customer joined TESCO's loyalty/membership program
Marital_Status	Text	Marital status (Single, Married, Divorced)
Region	Text	Geographic region assigned to the customer
Income_Group	Text	Income classification (Low, Medium, High)

2. [Customer Transactions.csv](#): Logs individual purchase transactions by customers across TESCO stores. Used for purchase behavior, frequency, and loyalty analysis.

Column Name	Data Type	Description
Transaction_ID	Text	Unique transaction ID
Customer_ID	Text	ID of the customer who made the transaction
Transaction_Date	Date	Date of the transaction
Store_ID	Text	Store where the transaction occurred
Product_Category	Text	Product category purchased (Grocery, Electronics, etc.)
Amount	Decimal	Total monetary value of the transaction
Quantity	Whole Number	Number of units purchased
Promotion_Applied	Text	Whether a promotion was applied (Yes/No)

3. [Store Locations.csv](#) : Contains metadata about TESCO store locations. Supports store-wise performance and retention analysis.

Column Name	Data Type	Description
Store_ID	Text	Unique identifier for each store
City	Text	City where the store is located
Region	Text	Region of the store (aligned with customer regions)
Store_Type	Text	Type of store (Superstore, Express)
Opening_Year	Whole Number	Year the store was opened

4. [Loyalty Program.csv](#) :Tracks customer participation in TESCO's loyalty program. Used for analyzing points behavior, tier effectiveness, and redemption trends.

Column Name	Data Type	Description
Customer_ID	Text	ID of the customer enrolled in the program
Loyalty_Tier	Text	Loyalty tier (Silver, Gold, Platinum)
Points_Earned	Whole Number	Total loyalty points earned
Points_Redeemed	Whole Number	Points used/redeemed by the customer
Last_Redemption_Date	Date	Date of most recent points redemption

5. [Churn_Labelled_Customers.csv](#) : Provides a churn flag and behavioral insight for each customer based on the date of last purchase. Supports churn rate analysis and customer reactivation strategies.

Column Name	Data Type	Description
Customer_ID	Text	Unique ID of the customer
Last_Transaction_Date	Date	Date of the most recent transaction
Churned (Yes/No)	Text	Churn label: "Yes" if the customer is inactive > 180 days
Days_Since_Last_Purchase	Whole Number	Number of days since last transaction (as of analysis date)

Task to be performed:

(Please refrain from using AI to perform the tasks mentioned below, as it will only provide generic solutions.)

Task 1: Data Modeling and Cleaning (10 Marks)

Goal: Prepare the data for analysis

- Use Power Query Editor to load and transform the datasets.
 - Remove duplicate rows based on key columns (e.g., Customer_ID, Store_ID)
 - Format columns: Convert dates, ensure numeric types for Amount, Points, etc.
 - Handle missing or null values appropriately (e.g., filter or replace)
- Create calculated columns:
 - Membership_Duration = Today - Membership_Since
 - Add a Transaction_Year and Transaction_Month column from Transaction_Date
- Create a basic Data Model view
 - One-to-Many: Customer_Demographics → Transactions, Loyalty_Program, Churn_Labelled_Customers
 - Many-to-One: Transactions → Store_Locations

Task 2: Churn and Retention Metrics (10 Marks)

Goal: Identify churn trends across segments

- Create a Churn Rate card: $(\text{Churned Customers} / \text{Total Customers}) * 100$
- Visualize churn rate by:
 - Region
 - Income Group
 - Store Type (via store join)
 - Identify top 5 segments with highest churn %
- Create funnel chart: Total Customers → Repeat → Churned

Task 3: Repeat Purchase Analysis (10 Marks)

Goal: Understand customer loyalty through repeat behavior

- Create a measure:
 - Low-Tier Customers: (2-4 purchases)
 - Mid-Tier Customers: (5-10 purchases)
 - High-Tier Customers: (11+ purchases)
- Compare avg. purchase frequency by:
 - Region
 - Age Group
 - Loyalty Tier
- Identify product categories most frequently bought by loyal customers

Task 4: Promotion & Loyalty Impact (10 Marks)

Goal: Evaluate how promotions and loyalty tier affect retention

- Create Measure:
 - % of transactions where promotion was applied
 - Avg. purchase amount with vs without promotion
- Compare churn rate across loyalty tiers
- Show Points Earned vs Redeemed by Tier using clustered column chart
- Recommend how to improve redemption and retention

Task 5: Store Performance vs Retention (10 Marks)

Goal: Link store characteristics to retention outcomes

- Merge Store_ID from transactions with Store_Locations
- Visualize:
 - Avg. transaction amount by store type
 - Churn rate by store region
 - Correlation between store opening year and retention
- Suggest where to run store-specific campaigns

Task 6: Customer Value (CLV) Analysis (10 Marks)

Goal: Identify and prioritize high-value customers

Calculate $CLV = \text{Total Amount Spent} / \text{Membership Duration (in years)}$

- Segment customers into:
 - Low (Bottom 25%)
 - Medium (Mid 50%)
 - High (Top 25%)
- Visualize:
 - CLV vs Days Since Last Purchase
 - CLV by Loyalty Tier and Region

Task 7: Final Dashboard and Executive summary (20 Marks)

Goal: Communicate insights for business action

- Create a multi-page Power BI report:
 - Page 1: Overview KPIs (Churn, CLV, Repeat Rate)
 - Page 2: Loyalty & Promotion Impact
 - Page 3: Store and Region Insights
 - Page 4: Customer Segmentation (Churned, Repeat, High-Value)

Add slicers: Region, Income Group, Loyalty Tier, Store Type

- Create a card or textbox summarizing top 3 recommendations:
- What should TESCO do to retain more customers?
- Where should they focus next?

Task 8: Video explanation: Expressing the finding and actionable insights (20 Marks)

(The summary should be in your own words and must not be generated using AI. Please don't write a script and read it aloud. Also, screenshare and show the key findings. Marks will be deducted for failing to do so.)

Content: 3-5 minute video explaining:

- Introduction to the project.
- Problem statement.
- Key findings and insights.

Project Submission:

Note:

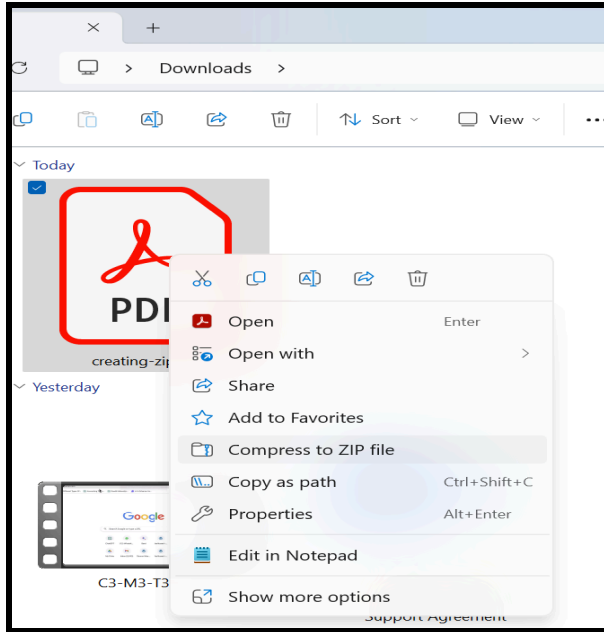
- The whole project should be submitted in a word file showing all tasks wherever with calculations, reporting features and dashboard with screenshots and the final submission should be in PDF file.
- Plagiarism will result in a penalty, including possible project disqualification.
- The project will be evaluated based on the quality of analysis and visualizations, depth of insights, feasibility of recommendations, clarity of explanations, and adherence to instructions and deliverables.

Submission Guidelines:

- Save the PDF in a folder and then convert it into a zipped (.zip) folder. **(Please note, the drivelink for the video created should also be added in the PDF itself.)**
- Upload the zipped folder on your respective dashboard.
- Failure to comply with submission guidelines will result in no grading/0 marks.

How to ZIP a PDF file:

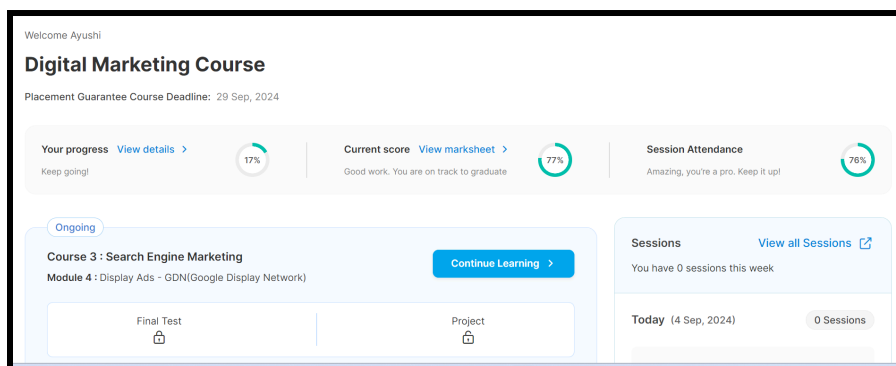
- Put all of the PDF you want to compress (or just one) into a new folder.
- Right click on that folder.



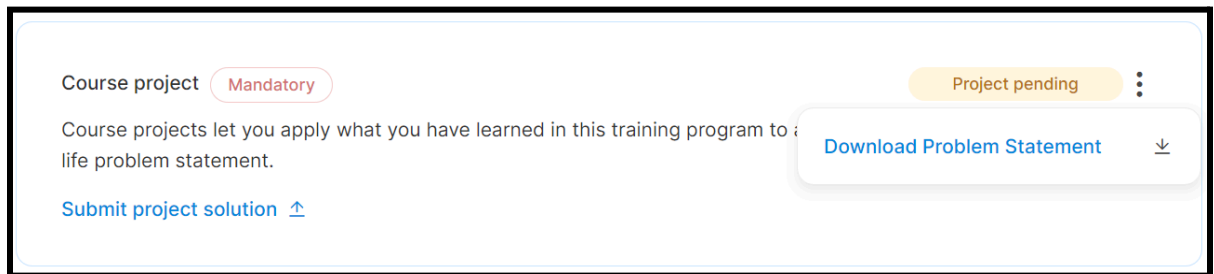
- Select the “Compress to ZIP file” option and then click “Compressed (Zipped) folder.”
- A new .ZIP file will be created that contains your document(s).

In order to submit the projects please follow the following steps:

1. Click on “Your progress [View details](#)” after logging into your dashboard.



2. Next, click on the tab for the specific child course for which you want to download the problem statement. Then, scroll down to find the "**Course Project**" section.
3. Now, click on the three dots on the right-hand side of the "Course Project" tab to select "**Download Problem Statement.**"



4. Please follow the guidelines (screenshot is shared below) provided in the project to ensure correct submissions. Then, click on "**Upload Project Solution**" to submit your work.

