Marketing Analytics Exam 2024 – 1st call

You will have **60 minutes** to answer eight multiple-choice questions and to solve three exercises using Microsoft Excel. By the end of the exam, you must submit the form by answering the questions, indicating possible assumptions made in the exercise resolution, and uploading the .xlsx file containing all the calculations performed during the test.

In the uploaded Excel file, you need to state and highlight the solutions of the exercise clearly. **If the answers to the exercise are not clearly presented, the exercise will not be considered as valid.**

* Obbligatoria

* Questo modulo registrerà il tuo nome, inserire il nome.

1. Name *

2. Surname *

3. Personal Code *

4. **Exercise 1**

You manage the Campus Café, a small coffee shop in Bovisa Campus. Your goal is to calculate the CLV (Customer Lifetime Value) and the average lifetime of a student in the Marketing Analytics course. Consider that the students enrolled in the Marketing Analytics course generate a net margin per purchase of €2.2.

Among the students of the course, roughly 50% make a purchase every class day, while the others do not purchase anything, also because they attend the classes remotely. The course lasts 12 weeks. Every week, some of the students stop following the lectures. In the first two weeks, classes are attended by some 150 students, then the study plan is defined, hence there is a drop to some 110 students, and from that moment on it is estimated a drop of some 5 students in the next three weeks. Among attending students, there is a probability of skipping one class each month due to health problems (e.g., flu). This probability is 5% in the first four weeks and increases to 8% in the following ones). Consider a weekly discount rate of 0,25%. Obviously, at the end of the course, all the students can be considered "churned".

Please report here the two values (in € and months) separated by a semicolon ";" (e.g., "100;1,5"):

5. **Exercise 2**

Sunrise Solutions is a company operating in the telecommunications industry. The main business of Sunrise Solutions is to provide broadband and digital TV services. On average, it estimates it loses 2.5% of its starting (at t=0) customer base monthly. The average margin of the service it renders is 12€/month (paid at the beginning of the period). Considering a Discount Rate (DR) of 1.1%, assess the customer lifetime value of a customer churning during the 8th month.

Please report here only the final value expressed in €:

Il valore deve essere un numero

6. You are analyzing the customer data for "MegaTek," a big company in the technological sector. Your task is to calculate the customer lifetime value (CLV) for a specific premium web service customer. Your analysis has observed that, on average, customers spend 15€ per month. It is also noted that the company has a monthly churn rate of 2%. The company operates with an average monthly margin of 30% on sales. Payments are made in advance at the beginning of the month. Use a Discount Rate (DR) of 0.5% per month for your calculations. You choose ChatGPT (a powerful AI system) to find the CLV easily. The AI system provides you with the following output:

   "*The calculated Customer Lifetime Value (CLV) for a specific premium web service customer at "MegaTek" is approximately €196. Here is the code on R:*

   # Parameters
   average_spend_per_month <- 15 # Euro
   monthly_churn_rate <- 0.02 # 2%
   monthly_margin_rate <- 0.30 # 30%
   discount_rate <- 0.005 # 0.5% per month

   # Calculating monthly net margin
   *monthly_net_margin <- average_spend_per_month * monthly_margin_rate*

   # Initializing CLV and the present value factor
   clv <- 0
   t <- 0

   # Estimated customer lifespan in months
   estimated_lifespan <- 1 / monthly_churn_rate

   # Calculate CLV using a loop for recursive calculation
   for (month in 1:estimated_lifespan) {
   * clv <- clv + (monthly_net_margin * (1 - monthly_churn_rate)/ ((1 + discount_rate)^t))*
   * t = t+1*
   }

   # Print the CLV
   print(clv)
   "

   Please explain by supporting your answer in a few words (2-3 sentences) if the solution proposed by the AI is correct.

7. **Please report here any assumption you relied on for the exercises (PLEASE REPORT YOUR HYPOTHESES ALSO IN THE EXCEL FILE):**