

## **customer relation marketing : system and computations**

Computational techniques and tools for the task: *MS Excel* modules (pivoting, visualisation graphs)  
The initial data file is the same for everyone : CRM\_coded\_EN2022.xlsx

Data mining procedures:

1. Exploration (data cleansing, e.g. dealing with negative values, transformation of the provided transaction data set by creating new derived variables for building customer data set.
2. Model building by applying ELT principle (Extract, transform, load) for creating variables and applying suggested techniques for their analysis
3. Deployment: using the elaborated models for generating insights

### **Creating CRM variables (Pivot ,MS Excel)**

Pivot analysis functions are used for creating variables for analysis, making analytical reports and for visualisation.

1. The analysis is performed by using all variables computed during the data exploration (transformation) phase. Among these variables are:
  - 1.1. The M is equal to the total value of purchases during all the history of communication.
  - 1.2. Average purchase during one visit
  - 1.3. Standard deviation of the selected variables
  - 1.4. Variable F indicator is equal to the number of visits of the customer
  - 1.5. Tenure (duration of life cycle in days)
  - 1.6. Variable R (Recency) show the number of days since the last visit till the date set for analysis (you can use the „Today“ or any other date (e.g. end of the year).
  - 1.7. Average number of days between visits
  - 1.8. Indicators of „good“, „bad“ or other types of customers
  - 1.9. Categorical variables for entitling meaningful subsets, frequency of routes, etc.

### **Marketing management models for analysis (MS Excel)**

2. Customer analysis by comparing two segments: individuals and firms. Please use various diagrams for graphical visualisation
3. „Whale curve“ analysis: in order to plot it you have to sort customers by descending order of their turnover values, to compute their cumulative percent values and to plot to Y axis. In X axis you plot the cumulative percent of the number of customers (e.g. if the enterprise has 10 customers, each of them makes 10% of the enterprise customers, second line will show cumulative of 2 customers which make 20 cumulative percent, etc. Till last line showing 100%).
4. Pareto analysis (testing of the statement if the turnover generated by 20% of best customers equals to 80% of total turnover of the enterprise).
5. RFM analysis (Recency, Frequency, Monetary value). The three indicators of R, F and M are computed for each customer.
6. Loyalty and Churn analysis – create variables and define the formulas for their values suitable for analysis of the level of loyalty (defined by yourself) of the customers. Select two variables for defining loyalty (frequency of visits or other variables). and to suggest formula for computing level of risk for churn.