Mohamed Khidher University

Faculty of economics, Commercial and Management Sciences
Department of commerce

Specialty: International Commerce & Finance
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Pratical Work 2

Exercise 1

A telecommunications company wants to predict whether a customer will **leave the service** (Y=1) or **stay subscribed** (Y=0). The company collects customer data on key factors that might influence subscription as follow: **Monthly Bill** ($) – The amount the customer pays per month. **Contract Length** (months) – The number of months the customer has been with the company. **Customer Service Calls** (count) – The number of times the customer contacted customer service in the last 6 months. **Internet Usage** (GB) – The amount of internet data used in the last 6 months.

ustomer_ID	Monthly_Bill	Contract_Ler	Customer_Se	Internet_Usa	subscription (stay/leave)
1	50	12	2	40	0
2	75	6	5	30	1
3	30	24	1	50	0
4	90	3	7	20	1
5	60	18	3	35	0
6	85	4	6	25	1
7	40	15	2	45	0
8	70	5	4	28	0
9	55	10	3	38	0
10	95	2	8	15	0
11	45	20	2	42	0
12	80	7	5	33	1
13	70	9	3	31	1
14	65	8	4	37	0
15	77	6	6	27	1

1. Write the logit model, and the logit regression equation
2. Using the given data:Perform logistic regression (using EViews). Obtain the estimated values of β_0, β_1, β_2 and β_3.
3. Explain the effect of independent variables on the likelihood of purchase based on the sign and magnitude of β_1 and β_2, β_3.
4. Predict the probability of purchase for a customer with income 70, age 40, Ads seen 7 and price of 67
5. Which factor has the **strongest influence** on customer purchasing decisions?

Exercise 2 :

Investors make decisions based on various financial and economic factors. This study aims to model the probability that an investor **chooses to invest (1) or not (0)** based on key independent variables, Sample dataset is as follow:

Investor	Invest	RiskTolerance	Income	MarketConfidence	Age
1	1	7	42	4	34
2	0	3	45	2	50
3	1	6	60	5	29
4	0	7	42	5	45
5	1	8	63	3	32
6	0	**4**	45	2	54
7	1	6	60	4	50
8	0	2	40	1	47
9	1	7	42	5	32
10	**0**	**2**	47	2	**46**

RiskTolerance: Scale from 1 (low) to 10 (high), **Income**: Annual income in $1000s, **MarketConfidence**: Sentiment score from 1 (low) to 5 (high), **Age**: Investor's age in years

Tasks

1) Assuming the normal distribution, which statistical model is most appropriate for predicting the probability of an investor choosing to invest in a financial asset?
2) What is the equation that models the probability of an investor's decision to invest (1) or not (0) based on key independent variables?
3) Estimate the coefficient,
4) What is the interpretation of the estimated coefficients and their impact on investment probability?
5) How do changes in key variables (risk tolerance, income, market confidence, and age) affect the probability of investment?
6) Predict the probability of invest for an investor with income 70, age 40, market confidence 2 and risk tolerance 6?
7) Which factor has the **strongest influence** on investor investment decision?