

MK 8710 CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

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Center for Excellence in
BRAND & CUSTOMER MANAGEMENT

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Assignment 3

Note: Please name the document as: *LASTNAME_FIRSTNAME_3*. Please submit the assignment by email to alahiri1@gsu.edu by **October 25th at 5pm**.

Consider ABC Sportswear, a catalog seller of Sportswear. You have data on the purchase behavior of six customers over the last five months (assume you are analyzing the data in the month of June). The following table¹ gives the dollar amount that each customer spent during January through May:

Customer	Jan	Feb	March	April	May
1	80	0	200	30	70
2	30	60	0	150	0
3	300	0	50	0	40
4	60	20	0	150	0
5	30	200	0	0	40
6	100	40	130	100	0

The following table gives the frequencies of purchase in each month for the six customers:

Customer	Jan	Feb	March	April	May
1	3	0	2	1	1
2	1	2	0	3	0
3	1	0	1	0	1
4	2	1	0	5	0
5	1	3	0	0	1
6	4	1	3	1	0

¹ Note: This is the same data set as in Assignment 2.

1. Calculate for each customer the probability of that customer being active in the months of:
 - a) June
 - b) July
 - c) August

Hint:

For calculating P (Alive), use the following formula:

$$P \text{ (Alive)} = t^n$$

where,

n is the number of months in which the customer has made purchases for the given period & t is the time of the last purchase (expressed as a fraction)

Illustration:

Say, a customer bought for 3 months in between Jan and May (Customer 4). We are at the end of May and want to assess his probability of being alive in June.

$t = (4/6) = 0.6667$ (4 because last purchase was in April, 6 because month that we are interested in is June)

$n = 3$ (3 because Customer 4 bought 3 times)

Thus: $P \text{ (Alive)} = (0.6667)^3 = 0.296$

We want to know customers' profitability for the months of June through August as of the beginning of June using the CLV. Let the gross profits be 30% of the purchase amount. ABC Sportswear has three ways of contacting customers with marketing messages: (a) through email campaigns guided to the online store, (b) by directly mailing catalogs to customers and (c) selling through telephone call-ins. For the months of January through May, the cost of contacting a customer once via email is \$0.25, via direct mailers is \$1 and via telephone calls is \$3. In each month during January to May, Customers 1, 2 and 3 are contacted via email **2 times**, and direct mail **5 times**. Customers 4, 5 and 6 receive email **1 time**, and telephone calls **3 times per month**.

2. Now calculate and analyze the CLV of each customer for the months of June, July and August as of the beginning of June.

Hint:

The CLV of a customer is their NPV of GC minus their NPV of Marketing Costs.
(Refer notes for formula)

Step 1: Calculate the probability of the customer being alive, P (alive) for each month and then calculate the Net Present Value of GC using the formula:

$$NPV \text{ of } GC_i = \sum_{t=1}^T P(\text{Alive})_{it} \times AMCM_i \left(\frac{1}{1+d} \right)^t$$

where,

NPV = Net Present Value

GC_{it} = estimated expected gross contribution margin of customer *i* at a given month *t*

$AMCM_i$ = average monthly gross contribution margin based on all prior purchases

d = discount rate for month *t* (15% on a yearly basis which is 1.25% per month)

i = customer

t is the month for which NPV is being estimated

T is the number of months ahead that are included in the forecast (June, July and August)

P (Alive) is the probability that customer *i* is alive in month *t* (previously computed)

Step 2: Calculate the Net Present Value of MC using:

$$NPV \text{ of } MC_i = \sum_{t=1}^T \frac{\sum_m c_{i,m,t} \times x_{i,m,t}}{(1+d)^t} = \sum_{t=1}^T \frac{AMMC_i}{(1+d)^t}$$

where,

$c_{i,m,t}$ = unit cost of marketing to customer *i* through channel *m* in month *t*.

$x_{i,m,t}$ = number of contacts to customer *i* through channel *m* in month *t*.

d = discount rate for money.

T is the number of months ahead included in the forecast.

$AMMC$ = Average monthly marketing cost for all prior months

Step 3: Calculate CLV of each customer as:

$CLV = NPV \text{ of } GC - NPV \text{ of } MC$

3. Compare the rankings of all the customers based on the results obtained from each of the four methods:

- a) RFM method
- b) Past Customer Value scoring method
- c) NPV of GC
- d) CLV method

Why do you think the rankings differ?