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Module 2.3 Customer Demand & Loyalty

Customer Relationship Management

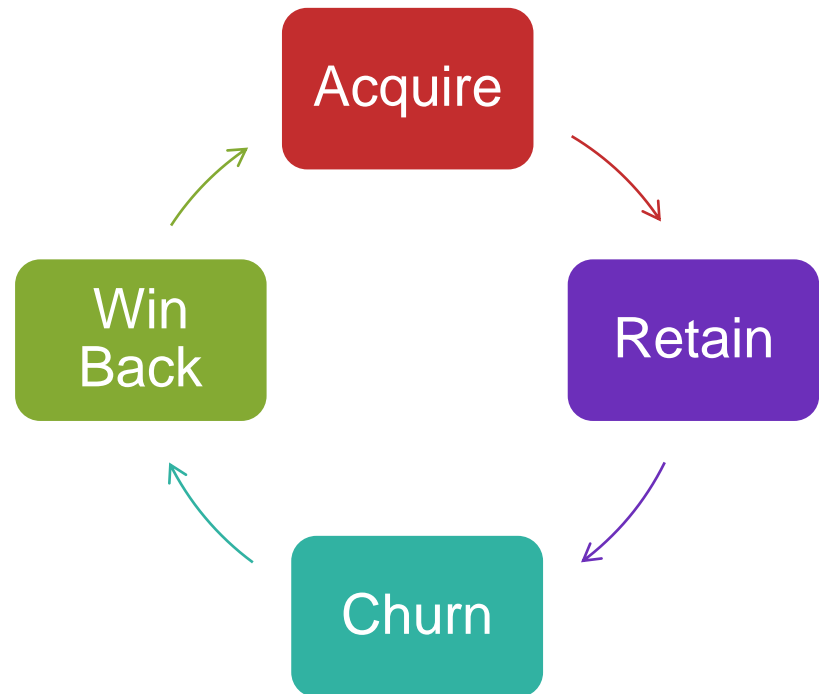
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Day 2 Lesson Plan

- Day 2: Customer retention & growth
 - Customer Lifetime value
 - **Customer Loyalty & demand**
 - Workshop using Excel simulation on CLV

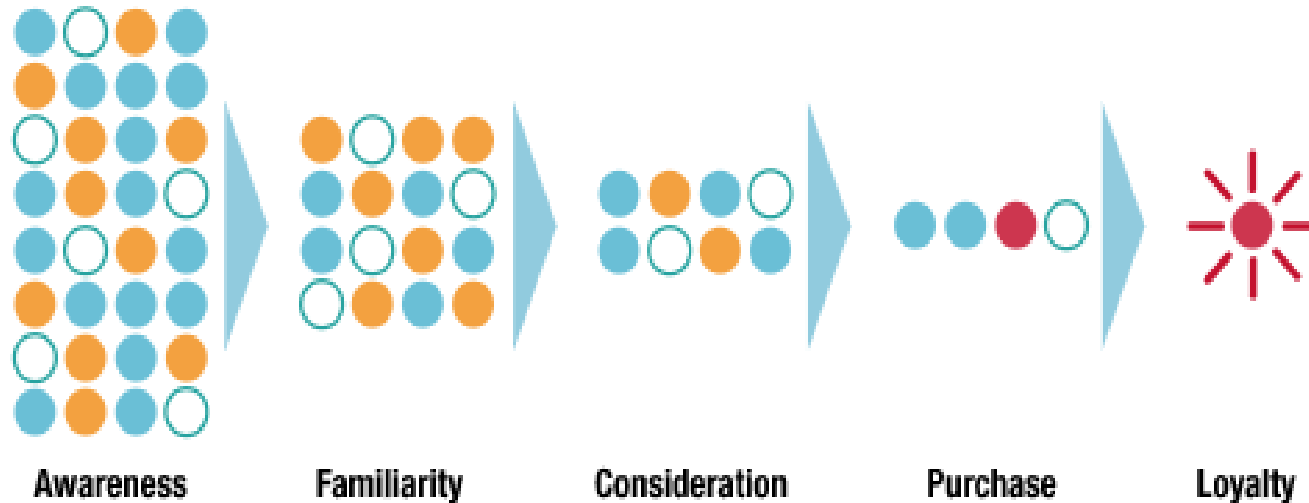


Content

- Defining Customer Loyalty
- Customer Wallet analysis
- Latency analysis
- Differential pricing & Price elasticity of demand

Customer Loyalty

A Perspective : Funnel of Customer Decision (old)



<https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-consumer-decision-journey>

What is Customer Loyalty?

- Customer loyalty is viewed as the strength of the relationship between an Customer and a supplier
- What is the difference between Customer loyalty and brand loyalty
 - Customer loyalty mainly relates to the overall spending power of consumers and what you can offer them in terms of regular prices and money-saving offers.
 - Brand loyalty has very little to do with prices or money, but has everything to do with how a particular brand is perceived by the consumer.
- Customer loyalty can be maintained by offering regular loyalty discounts, special offers or multi-buy deals.
 - Example, Airlines, Telecom/Internet Service provider
- Brand loyalty is much easier to managed once established, *as long as you maintain high-quality of product and service.*
 - Loyalty is supported by word-of-mouth and referrals
 - Customer is willing to pay more
 - Example: Mercedes E-class, I-Phone



Benefits of Customer Loyalty: the 3 R's

1. Retention
2. Related sales
3. Referrals

Customer loyalty is closely related (glue) to other aspects of CRM, and often a 'forgotten' tool.

What do Loyal Customers do?



- Likely to refer you to her friends and contacts.
- Likely to continue buying from you as long as the need is there.
- Not actively looking for other suppliers.
- Not open to sales pitches from competitors.
- Open to other products and services that you offer.
- Easy going towards emerging issues and gives you time and trust to fix them.
- Likely to give feedback about how you could improve.

<https://www.userlike.com/en/blog/measure-customer-loyalty>

The Road to Customer Loyalty: the 3 R's

1. Reward

- Customer loyal programs

2. Recognition

- Soft benefit, appreciation

3. Relevance

- Linked to customer profiling and customisation

But are Loyal Customers Profitable?



- Not always!
- Several myths pertain to loyal customers:
 - Myth 1: Loyal Customers Cost Less to Serve
 - But reward and other customer retention programs may be expensive
 - Myth 2: Loyal Customers are willing to pay Higher Prices for the Same Products
 - They may also have access to better prices from the competition for near-identical products
 - Myth 3: Loyal Customers effectively market the company
 - They may make referrals about several different firms
- When to stop investing in the customer?
 - Some customers may not be profitable to serve,
 - Therefore effective customer retention programmes should only be applied to profitable customers
 - Also it might be more profitable to acquire customers with high potentials rather than retaining customers with low interest in/expenditure on your products

Customer Loyalty in e-Commerce

- Do customers display loyalty to e-Commerce vendors?
- Comparing prices and visiting online stores is much easier than in a brick-and-mortar store
- But, loyalty on the internet has been found to be higher than in conventional business
 - Lock-in effort is reduced
 - Customers may not search as much as expected
- Processes that impact upon customer loyalty
 - **Customization** is the ability of an e-retailer to tailor products, services, and the transactional environment to individual customers.
 - **Contact interactivity** refers to the dynamic nature of the engagement that occurs between an e-retailer and its customers through its web site.
 - **Cultivation** is the extent to which an e-retailer provides relevant information and incentives to its customers in order to extend the breath and depth of their purchases over time.
 - **Care** refers to the attention that an e-retailer pays to all the pre- and post-purchase customer interface activities designed to facilitate both immediate transactions and long term customer relationships.



S.S. Srinivasan et al. / Journal of Retailing 78 (2002)

The Keys to Customer Loyalty

1. Shared values – trust.
 - In a survey done by HBR, 68% of customers identify shared values as primary reason to being loyal to a company
2. Keeping it simple and personalised
3. Omni-channels:
 - Benefits related to customers' well-being

Simple Measures of Customer Loyalty

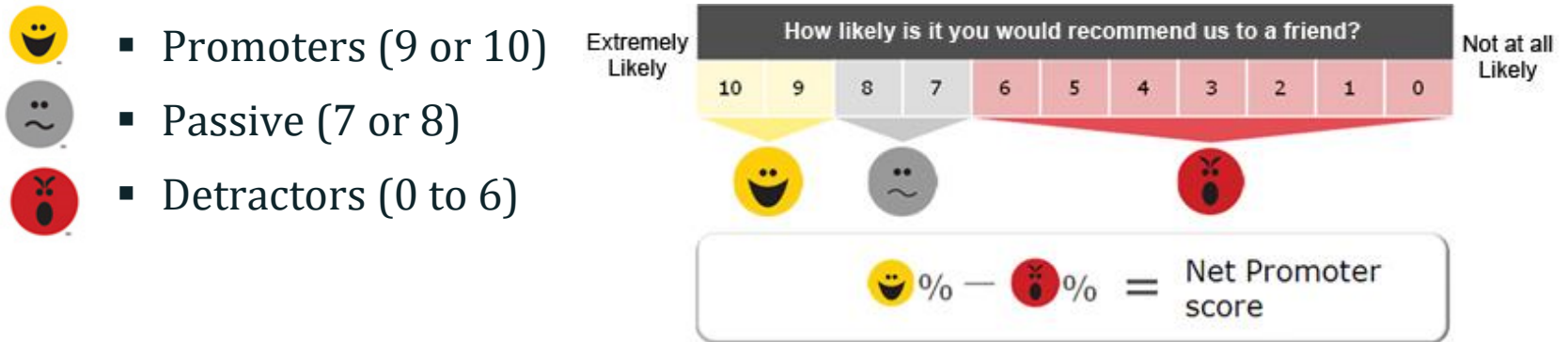
- **Repurchase Ratio** =
$$\frac{\text{No. of Repurchase Customers}}{\text{No. of One-time customers}}$$
- **Upselling Ratio** =
$$\frac{\text{No. of Customers who have bought more than one type of product}}{\text{No. of Customers who have bought only one type of product}}$$
- **Customer Loyalty Index**
 - Calculated for a (large) sample of Customers
 - You ask them to answer 3 questions by giving a score from 1 to 6, where
 - 1 stands for “Absolutely Yes”, 6 stands for “Definitely Not”.
 - The three questions are
 - *“How likely are you to recommend us to your friends or contacts?”*
 - *“How likely are you to buy from us again in the future?”*
 - *“How likely are you to try out other of our products/services?”*
- The CLI is calculated as the average score translated to a grading between 0 and 100

Average score	CLI (%)
1	100
2	80
3	60
4	40
5	20
6	0

<https://www.userlike.com/en/blog/measure-customer-loyalty>

Another Simple measures of Customer Loyalty: Net Promoter Score

- Net Promoter Score focuses on just one of the questions used for CLI
 - *How likely is it that you would recommend our company/product/service to a friend or colleague?*
 - It is calculated based on responses to a single question:
 - The scoring for this answer is often based on a 0 to 10 scale



<http://www.netpromotersystem.com/about/measuring-your-net-promoter-score.aspx>

Some Summary statistics

- We can create some summary statistics from the above
 - The number of promoters = #P (No. of respondents with scores of 9 or 10)
 - The number of neutrals = #N (No. of respondents with scores of 8 or 7)
 - The number of detractors = #D (No. of respondents with scores of 1 to 6)
 - The total number of respondents = #T = (#P + #N + #D)
- We can also define the *Net Promoter Score* as
 - $NPS = (\#P - \#D) / \#T$
 - *This can vary from -1 to +1*
 - If it is positive and close to +1 then overall, people are recommending you
 - If it is negative and close to -1 then you have an image problem!

<https://www.genroe.com/blog/how-to-calculate-margin-of-error-and-other-stats-for-nps/5994>

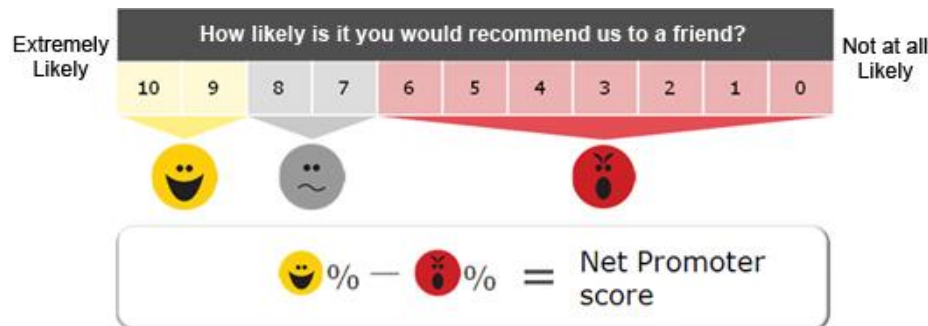
Some Summary statistics (cont.)

- We can also determine the margin of error about the average score
- Firstly calculate the Variance of the sample NPS
- $\text{Var}(\text{NPS}) = (1 - \text{NPS})^2 * \#P/\#T + (0 - \text{NPS})^2 * \#N/\#T + (-1 - \text{NPS})^2 * \#D/\#T$
- Then calculate the Margin of Error (MoE) for your sample:
- $\text{MoE} = \text{SQRT}(\text{Var}(\text{NPS})) / \text{SQRT}(\#T)$
 - Gives the precision around the NPS.

<https://www.genroe.com/blog/how-to-calculate-margin-of-error-and-other-stats-for-nps/5994>

Example analysis of Promoter scores

- The Tampines Grand Hotel has recently conducted a survey to determine the level of satisfaction of customers who have stayed at the Hotel
- In particular it asked :
 - *How likely is it that you would recommend our Hotel to a friend or colleague?*
- They asked customers to score from 1 to 10



The Data and summary statistics

Responders	Score	Responders	Score
1	10	21	8
2	6	22	2
3	4	23	3
4	4	24	8
5	9	25	10
6	8	26	8
7	8	27	9
8	4	28	9
9	2	29	9
10	2	30	7
11	6	31	6
12	8	32	5
13	6	33	10
14	5	34	10
15	9	35	4
16	9	36	8
17	10	37	8
18	5	38	2
19	3	39	5
20	8	40	5

Calculation of Statistics

#D = 19

#N = 10

#P = 11

#T = 40

NPS = ?

MoE = ?

Go to worksheet Day 2 - Loyalty

Customer Wallet analysis

Customer Wallet Analysis

- Customer wallet analysis is about **customer spending power**
- Subtle difference between wallet analysis and CLV.

- Wallet
 - *The amount of money a customer can spend on a certain product category.*
- Share of Wallet
 - The percentage of a customer's spending within a category that's captured by a given brand, or organisation.

- Customer Lifetime Value (CLV)
 - The discounted sum of cash flows generated over the lifetime of an individual customer, or of a segment of customers
 - Can be calculated as the Net Present Value (NPV) of the profit that you realize on the average new customer during a given number of years.

Multiple Wallet Definitions - IBM approach

- TOTAL: Total customer available budget in the relevant area (e.g., total IT)
 - Can we really hope to attain all of it?
- SERVED: Total customer spending on all IT products covered by IBM
 - Better definition for our marketing purposes
- REALISTIC: Spending on IBM by the “best similar customers”

$$\text{REALISTIC} \leq \text{SERVED} \leq \text{TOTAL}$$

“What’s in your wallet? Opportunity modeling approaches and applications” Claudia Perlich Formerly: IBM Research

Existing Approaches to Wallet Modeling

- How do we estimate the budget for each of our customers?
 - **Bottom up**: create individual models for individual companies
 - Use surveys to get real wallet values (very expensive)
 - Small, typically not representative sample
 - Unreliable because ill defined
 - Coarse level of IT product categories
 - **Top down**: this approach was used by IBM Market Intelligence in North America (called ITEM)
 - Use econometric models to assign total “opportunity” to segment (e.g., industry × geography)
 - Then assign to companies in segment proportional to their size
 - Completely ad- hoc without any validation

“What’s in your wallet? Opportunity modeling approaches and applications” Claudia Perlich Formerly: IBM Research

Current Methods for determining Wallet size

- Simple Ratio-based Allocation rules
- Rank based Allocation Estimates
- Quantile regression models*
 - *“High-Quantile Modeling for Customer Wallet Estimation and Other Applications” by Claudia Perlich, Saharon Rosset, Rick Lawrence, Bianca Zadrozny*
- Models based on the Generalised Binomial model*
 - *“Predicting Customer Wallet without Survey Data” by Nicolas Gladys Christophe Croux*

* Not covered in course (briefly)



Simple Ratio –based Allocation rules

- Suppose you are a supplier to a customer
- There are three other suppliers
- You know that the customer budget is \$ 100,000 pa
- So you estimate your share will be $\frac{1}{4}$ of this wallet
= \$25,000



Estimating Wallet Size using the *Wallet Allocation Rule*

1. Establish the number of brands, or suppliers, a customer uses for the product category you wish to analyze.
2. Survey the customer to obtain your rank – are you the customer's 1st preference, 2nd, 3rd, etc.
3. To arrive at a brand's share of wallet for a given customer, plug the brand's rank and the number of brands into the *Wallet Allocation Rule* formula:

$$\text{Brands share} = \left(1 - \frac{\text{Rank}}{(\# \text{ Suppliers} + 1)} \right) \times \left(\frac{2}{\# \text{ Suppliers}} \right)$$

Go to [menti.com](https://www.menti.com) code 78101 to rank handphone models.

<https://www.lighthousemktg.com.au/the-smart-way-to-calculate-your-share-of-customer-wallet/>

Example of estimating Wallet Size using the *Wallet Allocation Rule*

- Post-survey, what is the brand share of the handphone Oppo in the market?
- Suppose the market for handphones in Singapore is about 3 million, and each customer is willing to spend \$500 each year on their handphone. What is the estimated wallet size for your phone model?
- What is also the total wallet size for handphones?

<https://www.lighthousemktg.com.au/the-smart-way-to-calculate-your-share-of-customer-wallet/>

Assessing Each Customer's Wallet Share

1. Define profile groups:

- What are the common groups amongst the individuals?
- What are the characteristics of each group?

Tie in with the customer segmentation that is taught earlier on.

2. Understand Profile Groups

- Delve deeper into each profile group
- Understand their behavioural patterns and what they like or dislike?

3. Assess Individual past spending

- Project each individual profile to the group profile.
- Liken to Market Basket analysis or association

4. Act !

1. Equip the sales people or relational manages

Statistical Method: Quantile Regression?

- When we perform ordinary linear regression (or some equivalent) we are trying to characterize and predict the conditional mean, and also associated summary measures
 - E.g. variance, skewness, kurtosis, etc.
- However, except in some special cases or when the distribution is exactly known, a distribution can not be completely characterized by its moments.
- Mean and median characterize the “average” and “center” of y but may provide little info about the tails of the distribution
- **Quantile regression** aims at estimating either the conditional median or other quantiles of the response variable
 - **Linear regression** can be thought as fitting a model of the form
$$\text{Mean } Y(\text{response variable}) = \Sigma (\text{explanatory variables} \times \text{coefficients})$$
 - **Quantile regression** can be thought as fitting a model of the form
$$\% \text{ Quantile } Y(\text{response variable}) = \Sigma (\text{explanatory variables} \times \text{coefficients})$$

IBM formulation of the problem as Quantile Estimation

- Linear regression is to find the mean 50th percentile of the expected wallet size. In this case, for quantile regression suppose there are 100 suppliers, need to estimate the 75th rank (3rd quantile), 25th rank (1st quantile) and so forth)



Slide 29

<https://www.lighthousemtg.com.au/the-smart-way-to-calculate-your-share-of-customer-wallet/>

Difficulties in estimating Wallet size

- **Data scarcity and reliability**
 - Customer Budget
 - Customer Preferences
 - Customers have no obligation to answers to such survey. Also they may give different answers as they may be trying to *induce* some effect
 - So surveys which represent “unbiased” samples of the customer universe are often extremely difficult to obtain, due to sampling issues, response bias issues, etc.
- **Mathematical models** mentioned above may have many complex equations and coefficients and much statistical uncertainty and noise
 - Parameter uncertainty especially when determining outliers/ what you cannot determine
- **Time stability**
 - Most models rely on essentially stable market conditions, and hence cannot allow for changing environments
 - Economic upturns/downturns
 - Other changes – e.g. bad weather conditions

Actual Case Study

- With a banking client with all its transactional banking payment.
 - A network of transacted parties (including clients and prospects)
- How do you determine the other banking services required by your client which they are acquiring from you?
 - What is the data you have → Internal transactional data.
 - External data: By key industry information provider.

Look out for external data and news. Look for financial reports. Will the client want to invest in something? How much is their budget?

Latency analysis

Latency Analysis

- Latency refers to the *average time between customers interacting with a supplier*; e.g.
 - making a purchase (not necessary only measure)
 - calling helpdesk
 - visiting the supplier website (similar to recency + frequency)
- Latency can be a critical input to customer anti-defection campaigns.
- For example:
 - Suppose a typical customer, interacts with the supplier in various events separated by (on average) 90 day intervals
 - Suppose there is a customer who has not interacted with supplier for a period >> 90 days. Then they are a prime candidate for an earlier than normal defection
 - What would be a good threshold here?

Customer Touch Points

- In today's digital age, there can be many aspects that a customer interacts with the company.
- For eg, visting the facebook pages, making calls, sending emails etc.
- These touch points with the customer are important to be managed as they can determined how you can win back or lose customers.
- We show an example of how latency analysis is used in one example below.

Latency Metric

- Latency may not be a fixed metric; the “average time between events may depend on whether this is the 1st interaction/event between customer and supplier; the 2nd event,.....
- Use latency metric to determine the timing of the retention program.

Time	Latency
Time between 1 st - 2 nd event	90 days
Time between 2 nd - 3 rd event	60 days
Time between 3 rd - 4 th event	30 days
Time between 4 th - 5 th event	60 days
Time between 5 th - 6 th event	90 days
Time between 6 th - 7 th event	120 days
Time between 7 th - 8 th event	150 days

An example of the use of Latency

- Suppose we information on 10 customers of a supplier
- In particular we know when “events” occurred where the customers interacted with the supplier

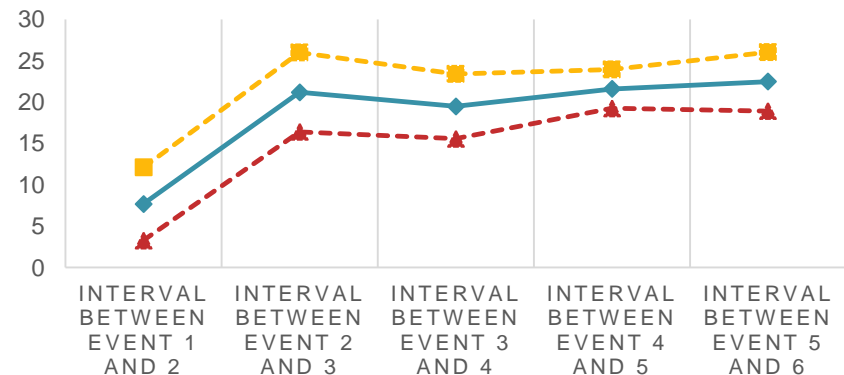
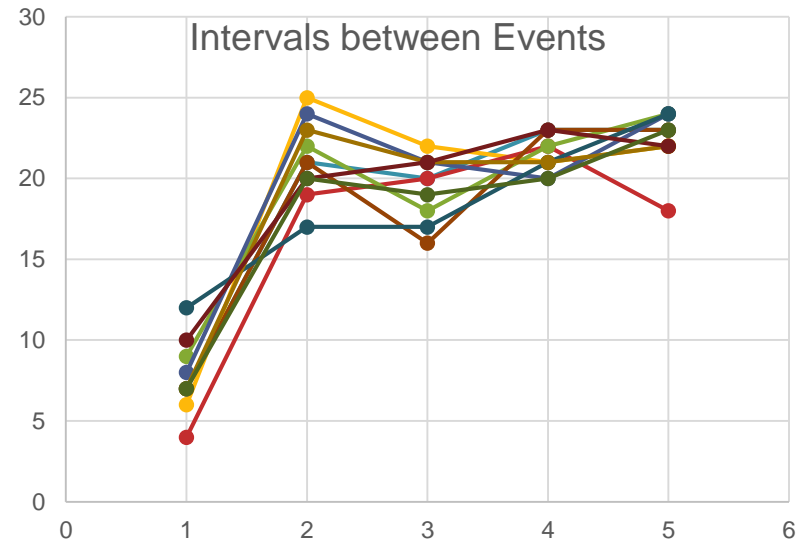
Customer	day of first event	day of second event	day of third event	day of fourth event	day of fifth event	day of sixth event
1	3	10	31	51	74	97
2	44	50	75	97	118	140
3	7	11	30	50	72	90
4	21	30	52	70	92	116
5	37	44	65	81	104	127
6	11	19	43	64	84	108
7	24	36	53	70	91	115
8	32	39	62	83	104	126
9	18	28	48	69	92	114
10	9	16	36	55	75	98

- We can translate this to days between event

Customer	Interval between Event 1 and 2	Interval between Event 2 and 3	Interval between Event 3 and 4	Interval between Event 4 and 5	Interval between Event 5 and 6
1	7	21	20	23	23
2	6	25	22	21	22
3	4	19	20	22	18
4	9	22	18	22	24
5	7	21	16	23	23
6	8	24	21	20	24
7	12	17	17	21	24
8	7	23	21	21	22
9	10	20	21	23	22
10	7	20	19	20	23

An example of the use of Latency (cont.)

- If we display this graphically then the variation in inter-event times becomes clearer
- If we simply plot the mean interevent times, and error limits, then it becomes even clearer



Comparison with new customer patterns

Comparing new Customer Latency



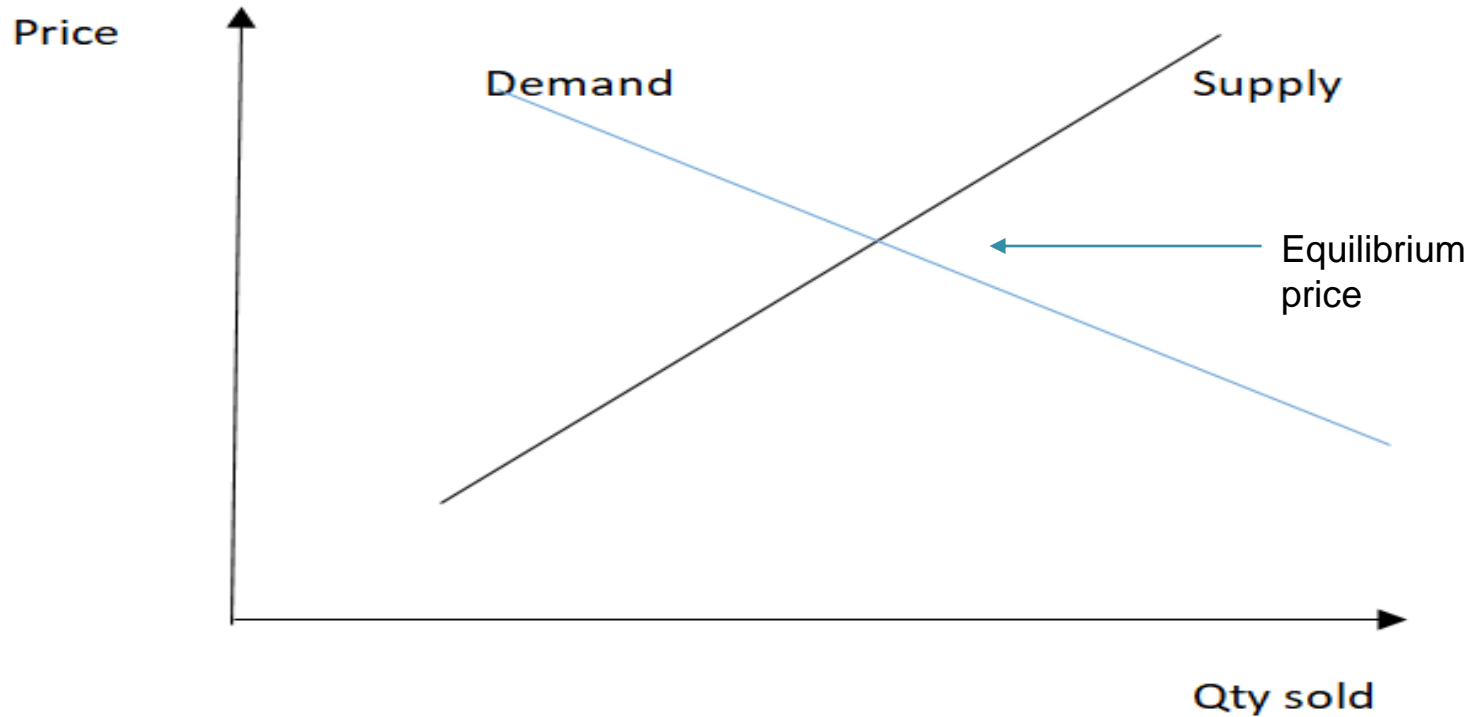
- Suppose we have two new sets of customer records, with the time between events as follows

Customer	Interval between Event 1 and 2	Interval between Event 2 and 3	Interval between Event 3 and 4	Interval between Event 4 and 5	Interval between Event 5 and 6
11	8	22	15	24	23
12	4	19	20	30	38

Differential pricing & Price elasticity of demand

Customer Elasticity of Demand

- Old demand and supply curve in economics : a recap



- <https://www.bloomberg.com/view/articles/2018-04-13/econ-majors-graduate-with-a-huge-knowledge-gap>

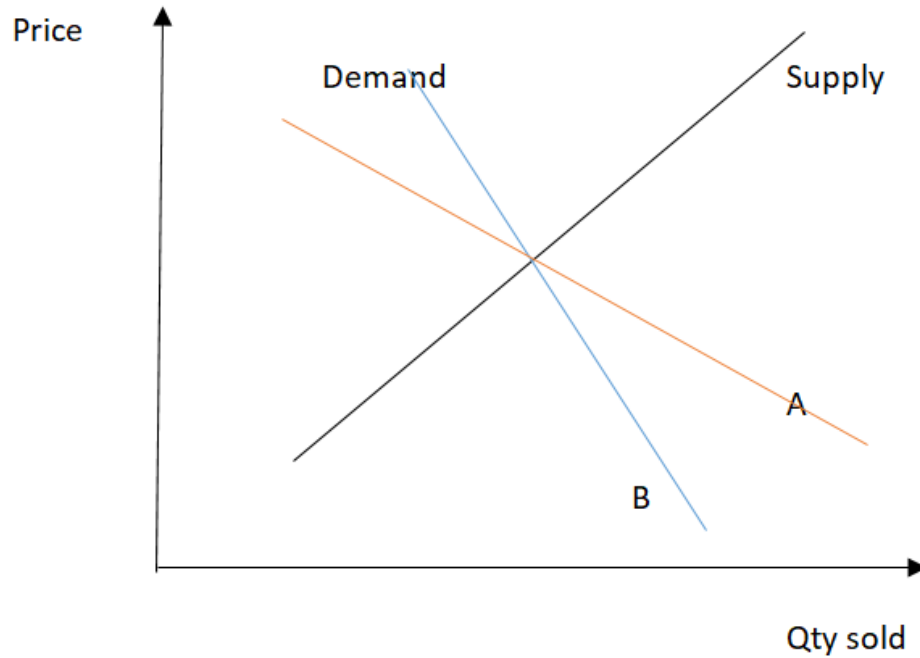
Be aware of the pitfalls....

Customer Elasticity of Demand

- Different customer types have different elasticities that are dependent on their income and substitution effects.
 - Higher income tend to have lower elasticity of demand
 - If a good has more substitution, it has a higher elasticity as well.
- Elasticity is defined as:

$\frac{\% \text{ change in goods sold}}{\% \text{ change in price change}}$

Customer Elasticity of Demand



Which group of customer A or B has a higher elasticity of demand?
Go to menti.com code 266208

Differential Pricing

- The different elasticity of demand for customers allows differential pricing to maximise profits.
- Differential pricing can come in different forms:
 - Price differentiation (tiered pricing) for ***different segments*** eg. Students, practitioners
 - Discounts during peak and off season
 - Volume discounts
 - Related products discount (later.. Market basket analysis)

Importance of Differential Pricing

Differential pricing 2 key importance:

- Maximising of profits from increased revenue/ sales
- Supply chain management
- Timing of pricing discounts

Relate to other areas of CRM studied.....

Summary- Analysing Customer Demand & Loyalty

- There are various ways of analysing customer behaviour and demand
 - Wallet Analysis
 - Differential pricing
 - Latency
- All should be applied together to get a clear understanding of your Customer and applications in managing CRM.
- Also an in-depth look at what customer loyalty means.

