MBA : Retail management , merchandising and E-commerce

4.CRM, Market basket and CLTV

Navdeep Yadav
Co-Founder Float
Product Manager |MBA|

Warby parker - Omni-channel Case study for eyewear

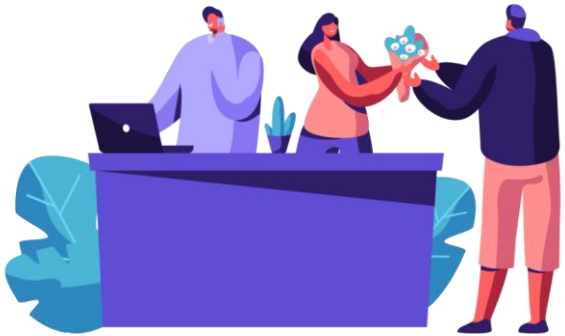
Product and service reach to the consumer where they are

CRM in Retail Management

CRM in Retail Management

What is CRM ?

Practices, strategies and technologies to improve customer experience, retention and life cycle



Customer experience	Retension	Customer Life cycle
⇩	⇩	⇩
Market Basket Analysis	RFM Analysis	Planogram

Pareto Principle

- 80 % of your sales come from 20 % of your clients.
- 80% of your profits comes from 20 % of your products or services.
- 80 % of decisions in a meeting are made in 20 % of the time.

Pareto Principle

"80% of your business comes from 20% of your customers."

This 20% is your loyal customer

Product Centric → Customer Centric

Customer Relationship Management

Components of CRM

- Marketing automation – Email funnel (MQL to SQL)
- Sales force automation – (Loyalty cards)
- Contact centre automation (chatbots, IVR etc)
- Geolocation technology, or location-based services (Geofencing)
- Workflow automation (Streamlining mundane workloads)
- Lead management (HubSpot, intercom, freshworks)
- Human resource management (workday, Darwin box)
- Analytics (Capillary)

Customer Relationship Management

A set of strategies to identifying and building loyalty with the most valuable customers.

History of purchases:

- Purchase date
- price paid
- SKUs bought
- whether or not the purchase was stimulated by a promotion

Customer contacts by retailer (touch points):

- Visits to web site
- inquires to call centre
- direct mail sent to customer

Analysing Customer Data

1. Identifying Market Segments (RFM analysis)
2. Identifying Best Customers (CLV analysis)
3. Increasing Share of Wallet (Market Basket Analysis)

RFM Analysis (Recency, Frequency, and Monetary Analysis)

Why are we doing RFM Analysis ?

Divide all your customer into loyalty bucket

Platinum- Best Most loyal

Least price sensitive

Gold- Next best Not as loyal

Iron -Doesn’t deserve much attention

Lead-Demands attention May have negative value

More Profits

Least profits

How RFM Analysis is helpful ?

RFM analysis helps marketers find answers to the following questions:

Who are your best customers?
Which of your customers could contribute to your churn rate?
Who has the potential to become valuable customers?
Which of your customers can be retained?
Which of your customers are most likely to respond to engagement campaigns?

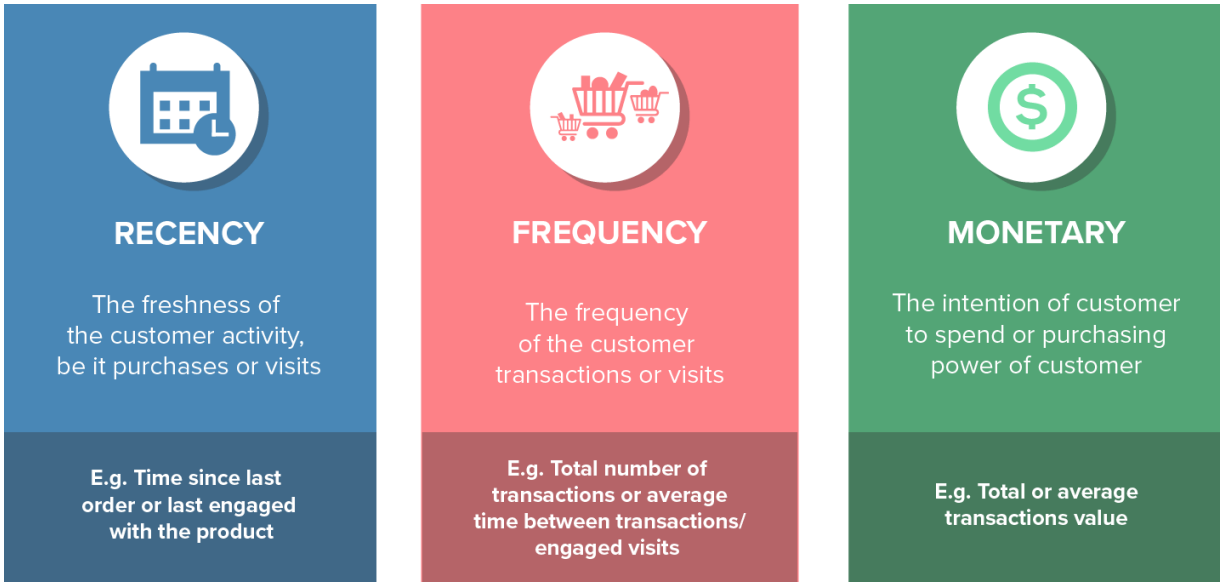
RFM Analysis (Recency, Frequency, and Monetary Analysis)

"80% of your business comes from 20% of your customers."

But how you will find this 20% of customers ?

RFM Analysis (Recency, Frequency, and Monetary Analysis)

Segment customers by the frequency and value of purchases and identify “best customers” who spend the most money.



Source:- clevertap

RFM Analysis (Recency, Frequency, and Monetary Analysis)

Recency in RFM

Let's demonstrate how RFM works by considering a sample dataset of customer transactions:

CUSTOMER ID	RECENCY	RANK	R SCORE
12	1	1	5
11	3	2	5
1	4	3	5
15	5	5	4
2	6	5	4
7	7	6	4
10	10	7	3
5	15	8	3
14	18	9	3
4	23	10	2
13	27	11	2
6	32	12	2
9	34	13	1
3	46	14	1
8	50	15	1

1. Sorted customers by recency

2. Rank these customer based on recency.

3. Assigned a scores from 1-5 (top 20% = 5)

-Top 20% of customers (customer 12, 11, 1)
-Lowest 20% a score of 1.

Source:- clevertap

RFM Analysis (Recency, Frequency, and Monetary Analysis)

Frequency and monetary in RFM

Similarly, we can then sort customers by frequency and monetary

CUSTOMER ID	FREQUENCY	F SCORE
9	15	5
2	11	5
12	10	5
11	8	4
1	6	4
10	5	4
5	4	3
13	3	3
7	3	3
4	3	2
14	2	2
6	2	2
15	1	1
8	1	1
3	1	1

CUSTOMER ID	MONETARY	M SCORE
9	2630	5
12	1510	5
8	950	5
2	940	4
11	845	4
1	540	4
10	191	3
5	179	3
7	140	3
4	65	2
6	56	2
13	54	2
14	40	1
3	35	1
15	25	1

Frequency-

- Sort customers by frequency (most to least frequent)
- Top 20% a frequency score of 5

Monetary-

- Sort customers by amount spend (most to least spend)
- Top 20% of customers (big spenders)

Source:- clevertap

Recency, Frequency, and Monetary Analysis

Final RFM score

CUSTOMER ID	RFM CELL	RFM SCORE
1	5,4,4	4.3
2	4,5,4	4.3
3	1,1,1	1.0
4	2,2,2	2.0
5	3,3,3	3.0
6	2,2,2	2.0
7	4,3,3	3.3
8	1,1,5	2.3
9	1,5,5	3.7
10	3,4,3	3.3
11	5,4,4	4.3
12	5,5,5	5.0
13	2,3,2	2.3
14	3,2,1	2.0
15	4,1,1	2.0

Rank these customers by combining their individual R, F, and M ranking for aggregated RFM score.

RFM analysis helps marketers find answers to the following questions:

Who are your best customers?
Which of your customers could contribute to your churn rate?
Who has the potential to become valuable customers?
Which of your customers can be retained?
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Source:- clevertap

Recency, Frequency, and Monetary Analysis

Is it fair to average out the individual R, F, and M scores

- In a consumer durables business, the monetary value per transaction is normally high but frequency and recency is low. (Eg. Purchasing a refrigerator or air conditioner)
- Retail business fashion/cosmetics (higher recency and frequency score than monetary score)

Original Data

Customer ID	Recency	Frequency	Monetary
1	9	42	15578
2	7	42	7273
3	118	38	18468
4	27	73	16692
5	3	8	2500

Converted to Quartiles

Customer ID	Recency	Frequency	Monetary
1	1	2	1
2	1	2	3
3	4	2	1
4	2	1	1
5	1	4	3

Segments

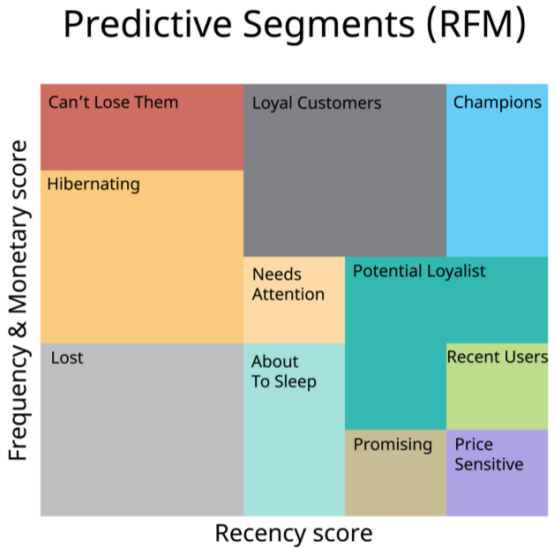
RFM Score
121
123
421
211
143

Source:- clevertap

RFM Analysis

RFM grid, we can get the following information for each of the segments:

- brief description of the segment
- recency (last activity)
- frequency (activity count)
- average monetary value
- reachability of users across different channels



Champions:- The biggest customers with high (3,3,3) values in all three factors that should be targeted with special promotions to keep them active.

Which Customer Probably Has the Greatest Lifetime Value

	Customer 1	Customer 2
Product	Bread	Bread + milk + Honey
Amount	$5	$20
Date	Yesterday	Last week
Past purchase	3 purchases	5 purchases

	Customer 1	Customer 2
Recency	3	1
Frequency	1	3
Monetary value	1	3
RFM Score	5	7

What after predictive segments in RFM?

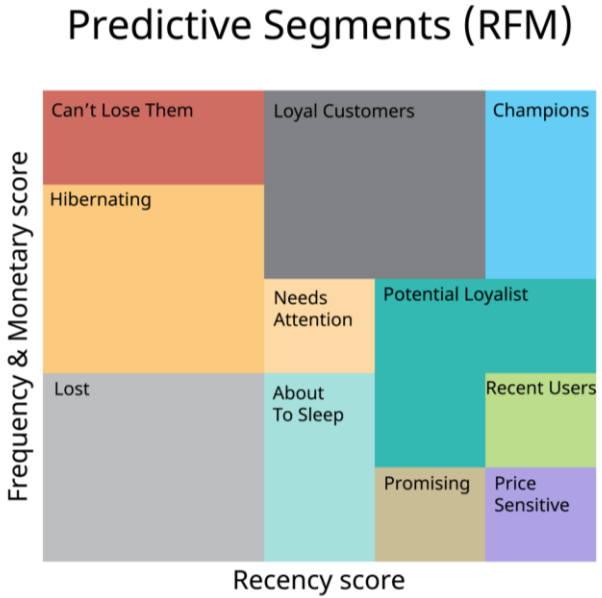
Let's delve into few interesting segments:

Champions are your best customers
Reward(Offer membership or loyalty programs)

Recent Users are your customers who have a high overall RFM score but are not frequent shoppers.
Building relationships (onboarding support and special offers)

Hibernation Customers - Who purchased often and spent big amounts, but haven't purchased recently.
Send Personalized reactivation campaigns

Can't Lose - Who used to visit and purchase quite often, but haven't been visiting recently.
Give Relevant promotions, Run surveys (what went wrong)



What after predictive segments in RFM?

RFM Excel Exercise Video here

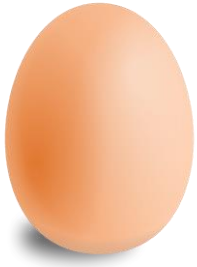
Analysing Customer Data

1. Identifying Market Segments (RFM analysis)
2. Increasing Share of Wallet (Market Basket Analysis)
3. Identifying Best Customers (CLV analysis)

Market Basket Analysis

Market Basket Analysis

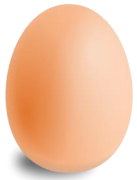
Why these three product are always placed close to each other ?



Based on the retail data these three products are always purchased together

Market Basket Analysis

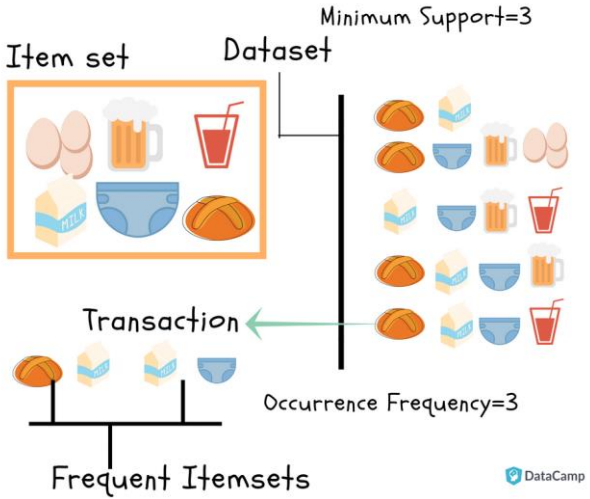
Market basket analysis helps us understand the List of products bought by each customer



Market Basket Analysis

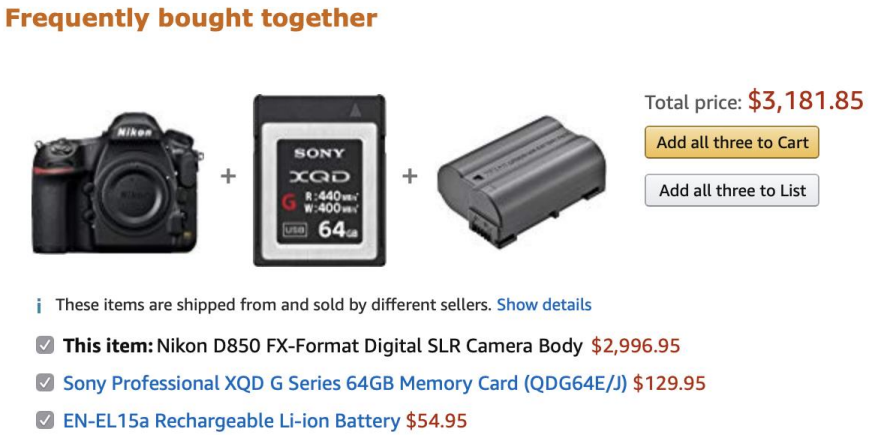
A Data mining technique used by retailers to increase sales by better understanding customer purchasing patterns.

Analyse large data sets, such as purchase history, to reveal product groupings, as well as products that are likely to be purchased together.



Use case of Market Basket Analysis

Amazon drives over 35% of their sales from recommendation system (billions of $ in sales)



- Increase per order value (ARPU)
- GMV (gross merchandise value)
- Up sell and cross sell

Main aim is to predict the probability of items that are being bought together by customers

- AIS
- SETM Algorithm
- Apriori Algorithm
- FP Growth

Market Basket Analysis (MBA)

Why we need to Understand Market basket Analysis

- Find out what are bought together
- Cross-selling of products
- Optimize shelf layout
- Product bundling
- Timing promotions
- Discount planning (avoid double-discounts)
- Product selection under limited space
- Targeted advertisement, Personalized coupons, item recommendations

Usage of Market Basket beyond retail

- Medical (one symptom after another)
- Financial (customers with mortgage acct also have saving act)

Frequent Itemset and Association(support) Rules from Data

A descriptive approach for discovering relevant and valid associations among items in the data.

Transaction No.	Item 1	Item 2	Item 3	Item 4	...
100	**Beer**	**Diaper**	Chocolate	Cheese	
101	Milk	Chocolate	Shampoo		
102	Beer	Coffee	Detergent		
103	**Beer**	Cheese	**Diaper**	Chocolate	
104	Ice Cream	**Diaper**	**Beer**		
...					

If buy diapers **Then** → Buy beer

Shoppers who buy Beer and Diaper are likely to buy Cheese and Chocolate

If buy Beer, Diaper **Then** → Buy Cheese, Chocolate

Association or support Rules

$$\text{Support} = \frac{\text{Freq}(X,Y)}{N} \qquad \text{Support} = \frac{3}{5} = 0.60$$

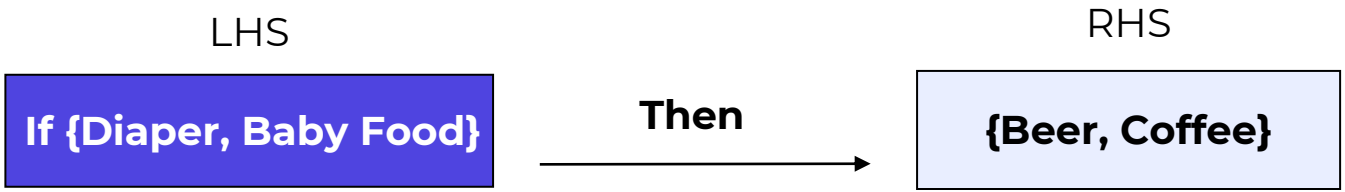
E.g., The support of the {Diaper} ----> {Beer} rule is 3/5:
0.60 or 60% of the transactions contain both items.

Transaction No.	Item 1	Item 2	Item 3	Item 4	...
100	**Beer**	**Diaper**	Chocolate	Cheese	
101	Milk	Chocolate	Shampoo		
102	**Beer**	Coffee	Detergent		
103	**Beer**	Cheese	**Diaper**	Chocolate	
104	Ice Cream	**Diaper**	**Beer**		
...					

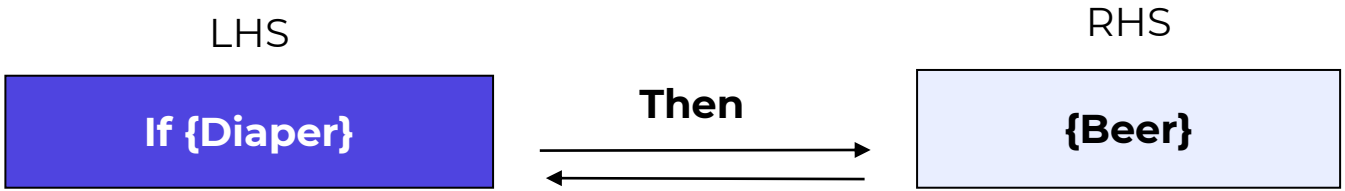
Among the transactions with Diaper, 100% have Beer
Among the transactions with Beer, 80% have Diaper.

Association or support Rules

Rule format: If {set of items} Then {set of items}



What rules should be considered valid?



An association rule is valid if it satisfies some evaluation measures

Confidence: Is Beer leading to Diaper purchase or Diaper leading to Beer purchase?

Rule Evaluation - Confidence

Confidence : Measures the percentage of times that item Y is purchased, given that item X was purchased.

$$\text{Support} = \frac{\text{Freq}(X,Y)}{N}$$

E.g., The support of the {Diaper} ----> {Beer} rule is 3/5: 0.6 or 60% of the transactions contain both items.

$$\text{Confidence} = \frac{\text{Freq}(X,Y)}{\text{Freq}(Y)}$$

Confidence for {Beer} → {Diaper} = $\frac{3}{4}$ = 0.75

Transaction No.	Item 1	Item 2	Item 3	...
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103	**Beer**	Cheese	**Diaper**	
104	Ice Cream	**Diaper**	**Beer**	

Rule Evaluation - Confidence

Confidence : measures the percentage of times that item Y is purchased, given that item X was purchased.

$$\text{Confidence}(Y) = \frac{\text{Freq}(X,Y)}{\text{Freq}(Y)}$$

Confidence for {Beer} → {Diaper} = $\frac{3}{4}$ = 0.75

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103	**Beer**	Cheese	**Diaper**	
104	Ice Cream	**Diaper**	**Beer**	

Confidence for {Diaper} →{Beer} : 3/3
When Diaper is purchased, the likelihood of Beer purchase is 100%

Confidence for {Beer} →{Diaper} : 3/4
When Beer is purchased, the likelihood of Diaper purchase is 75%

So, {Diaper} →{Beer} is a more important rule according to confidence.

Rule Evaluation - Confidence

Confidence for {Diaper} →{Beer} : 3/3
When Diaper is purchased, the likelihood of Beer purchase is 100%

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So, {Diaper} →{Beer} is a more important rule according to confidence.

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Confidence values range from 0 to 1, where 0 indicates that Y is never purchased when X is purchased, and 1 indicates that Y is always purchased whenever X is purchased.

Summarise Support, Confidence and Lift

$$Rule: X \Rightarrow Y$$

$$Supprt = \frac{Frequency(X,Y)}{N}$$

$$Confidence = \frac{Frequency(X,Y)}{Frequency(X)}$$

$$Lift = \frac{Support}{Support(X) \times Support(Y)}$$

Rule	Support	Confidence	Lift
$A \Rightarrow D$	2/5	2/3	10/9
$C \Rightarrow A$	2/5	2/4	5/6
$A \Rightarrow C$	2/5	2/3	5/6
$B \& C \Rightarrow D$	1/5	1/3	5/9

An example of Association Rules

Assume there are 100 customers
10 of them bought milk, 8 bought butter and 6 bought both of them.

bought milk => bought butter

support = P(Milk & Butter) = 6/100 = 0.06

confidence = support/P(Butter) = 0.06/0.08 = 0.75

lift = confidence/P(Milk) = 0.75/0.10 = 7.5

Lift

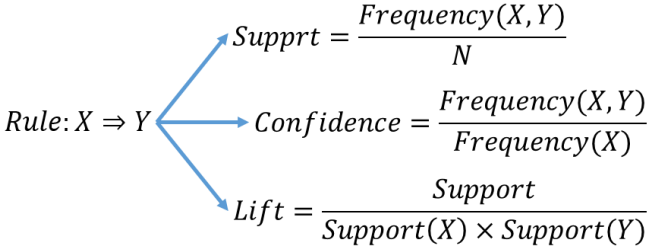
Lift

Lift: Unlike the confidence metric which have the direction
(e.g.: confidence{Beer --->Diaper}, lift has no direction.

This means that the lift{Beer, Diaper} is always equal to the lift{Diaper, Beer}:

Next Exercise :- Lift of bread and butter if 11 transaction is there in the order list

Market Basket Analysis: Lift



lift{butter, bread} = lift{bread, butter}

$$= \frac{\text{support\{butter, bread\}}}{(\text{support\{butter\}} * \text{support\{bread\}})}$$

$$\text{lift\{butter, bread\}} = \text{lift\{bread, butter\}} = \frac{(3/11)}{((3/11)*(7/11))} = \frac{0.27}{(0.27)*(0.636)}$$

lift{butter, bread} = lift{bread, butter} = 1.571

Assume a independent relationship.
If butter occurred independently in 27.2% (=3/11) of the orders and bread occurred in 63.6% (= 7/11) of the orders, then if there was no relationship between them

Than we would expect both of them to show up together in the same order 17.35% of the time i.e. {(0.27*0.636)

Market Basket Analysis: Lift

In summary, lift can take the following values:

Lift = 1; implies no relationship between X and Y (i.e., X and Y occur together only by chance)

Lift > 1; implies that there is a positive relationship between X and Y (i.e., X and Y occur together more often than random)

Lift < 1; implies that there is a negative relationship between X and Y (i.e., X and Y occur together less often than random)

In our example, butter and bread occur together 1.57 times more than random, so we conclude that there exists a positive relationship bet

Summarise Support, Confidence and Lift

$$Rule: X \Rightarrow Y$$

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$$Confidence = \frac{Frequency(X,Y)}{Frequency(X)}$$

$$Lift = \frac{Support}{Support(X) \times Support(Y)}$$

Rule	Support	Confidence	Lift
$A \Rightarrow D$	2/5	2/3	10/9
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Summarise Support, Confidence and Lift

Market basket analysis excel exercise Video here

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3. Identifying Best Customers (CLV analysis)

Customer Lifetime Value

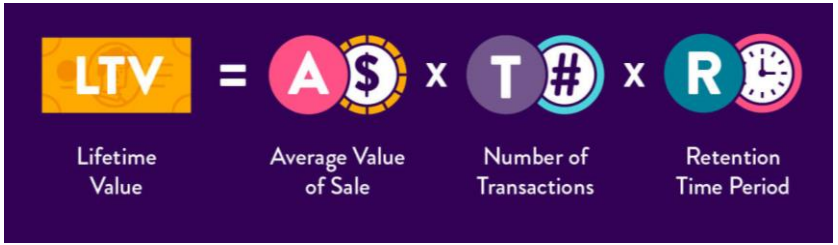
Source:- Clevertap

Customer Lifetime Value: What is it and How to Calculate

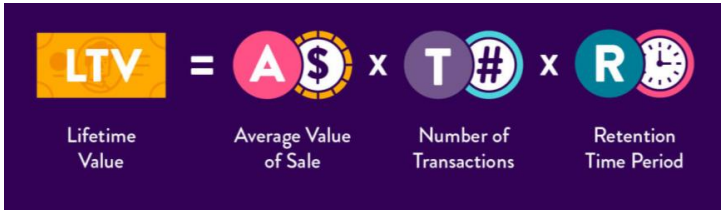
What is Customer Lifetime Value (CLV)

It is the profit that you can generate from an average customer over their lifetime.

- COGS(cost of goods sold)
- Customer acquisition costs (CAC)
- Marketing expenses
- Operating expenses



Customer Lifetime Value: What is it and How to Calculate



Let say there is a clothing retailer
Average Sales $50
Customer shopping frequency = 3 three times per year for two years

The lifetime value of this customer is calculated as follows:

Lifetime Value = $50 × 3 × 2
= $300

After calculating the cost of goods sold (COGS), overhead, marketing, and all other administrative expenses, the profit margin is 20%.

Customer Lifetime Value = $50 × 3 × 2 × 20%
= $300 × 20%
= $60

Customer Lifetime Value: Assignment

	Metrics	Amount
1	Total Revenue	$10,000
2	Total customer	100
3	ARPU/ Average Sales	$?
4	No to transaction	10
5	Churn per year	20%
6	Retention time	?
7	Profit margins	20%
8	LTV	?

$$\text{Average Revenue Per User (ARPU)} = \frac{\text{Total Revenue}}{\text{Total Users}}$$

$$\text{Retention time} = \frac{1}{\text{customer churn rate}}$$

Life time value (LTV) = ARPU x no. of transaction x Retention

$$\text{Gross Margin (\%)} = \frac{\text{Revenue} - \text{COGS}}{\text{Revenue}}$$

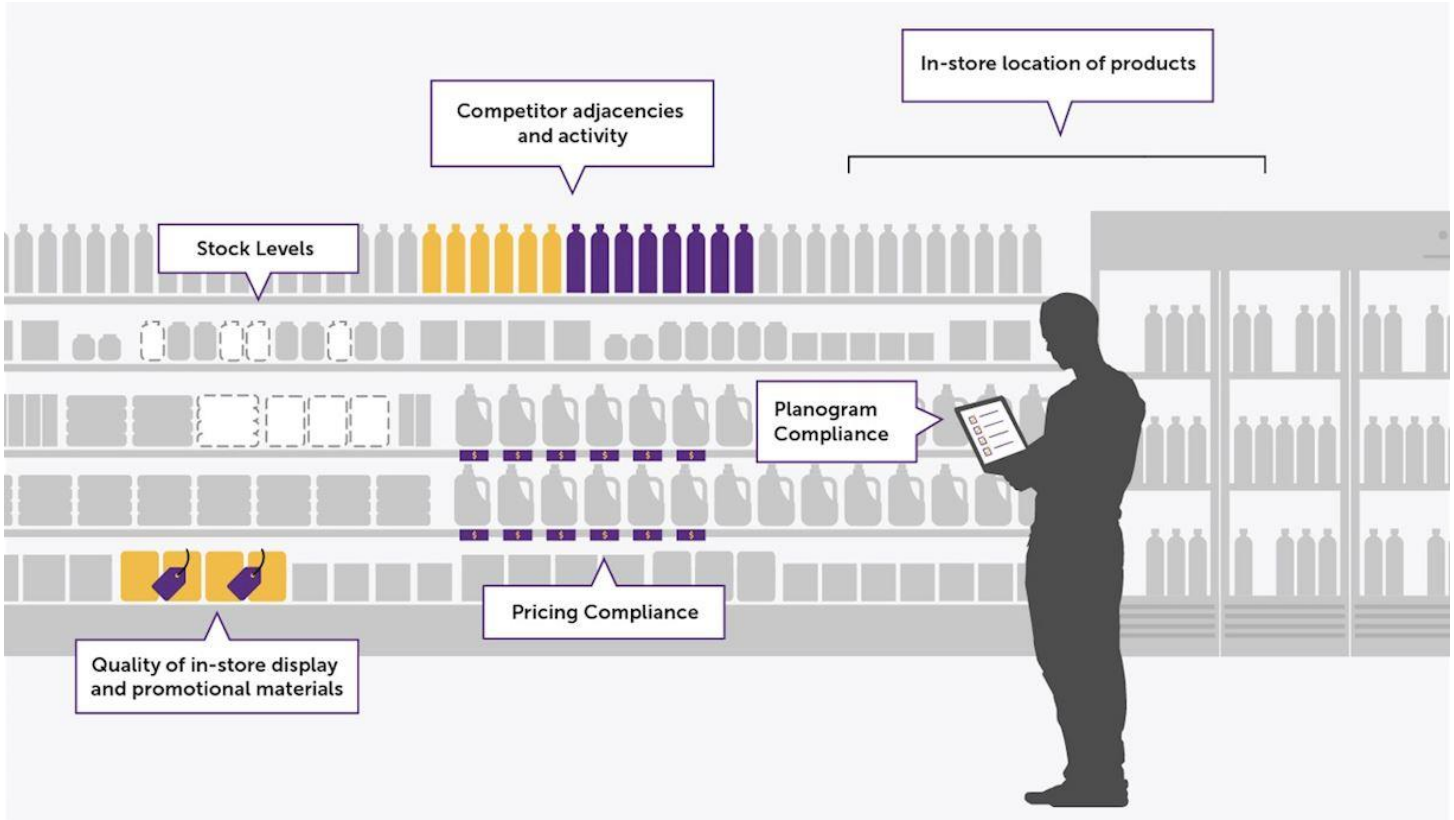
CTLV = ARPU x Gross Margin x Lifetime value

Customer Lifetime Value: What is it and How to Calculate

Calculate Your Customer Lifetime Value In 30 Seconds!

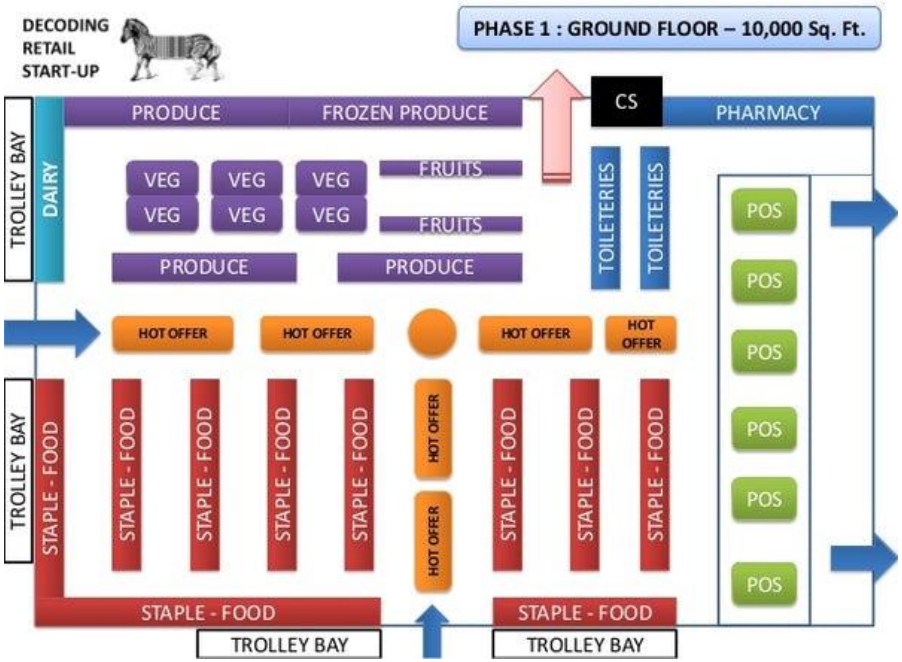
https://clevertap.com/cltv/

Planogram 101: The Ultimate Guide to Store Design



Planogram 101: The Ultimate Guide to Store Design

Store layout is the strategic use of space to influence the customer experience



Store Design
Strategic floor plans
Space management
Furniture, displays, fixtures, lighting
E-commerce design (UX)

Customer Flow
Geographic location, Size of the building
Shopper analytics (heatmap)
Cookies in case of e-commerce

A Step-By-Step Guide to Planning Store Layouts that Maximize Your Space

Step 1: Target The First Floor

- Research indicates that customers prefer to navigate the floor of a retail store they initially entered.
- Walking up and down stairs or using elevators and escalators to navigate a store hurts customer flow

Step 2: Identify Customer Flow

Use video recording and heat mapping analysis.

Step 3: Design for Clockwork Navigation

Customers consistently turn right after entering the store and continue to navigate the store in a counter clockwise direction.

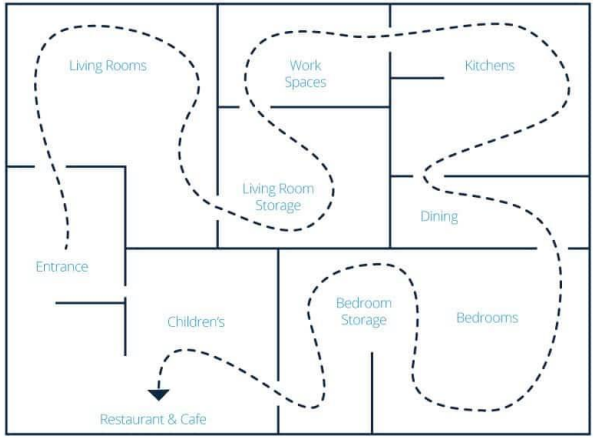
Step Five: Remove Narrow Aisles

Video analysis showed fewer customers entering narrow aisles in the store compared to the more expansive, accessible walkways.

Essential Retail Store Layouts

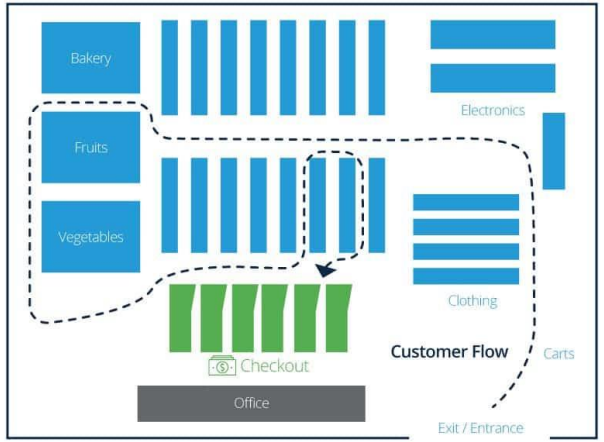
1. Forced-Path Store Layout

(IKEA- exposed to all of the merchandise offered)



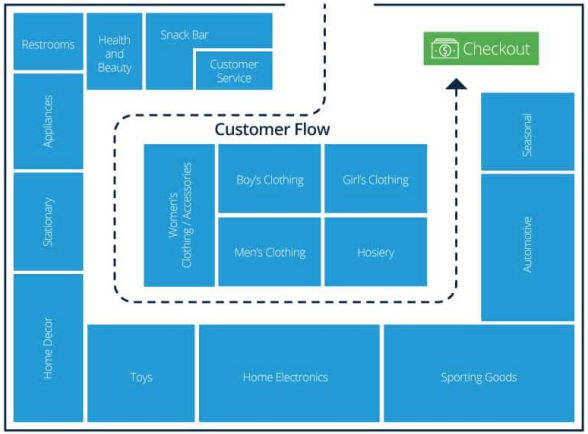
2. Grid Store Layout (Walgreens)

Customers can move quickly efficient floor space



Essential Retail Store Layouts

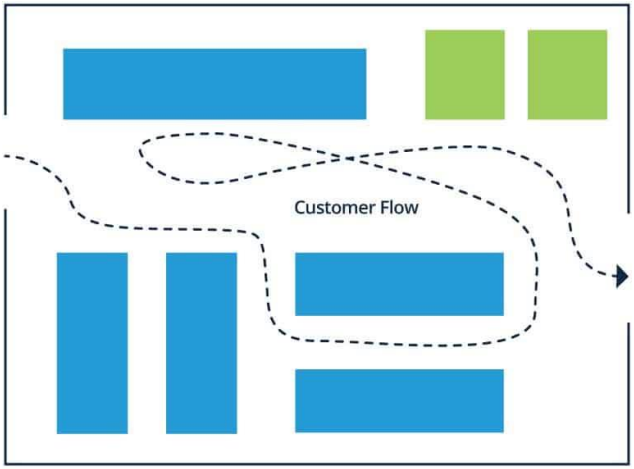
3. Loop Store Layout



Interesting visual displays

- Fashion store
- Beauty product

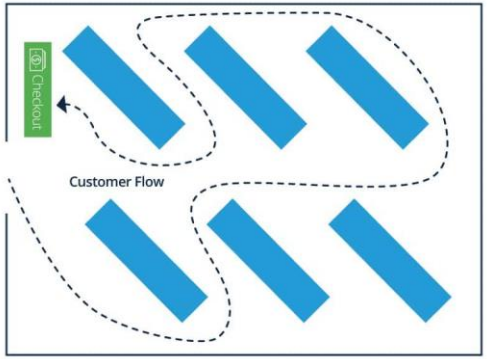
4. Straight Store Layout

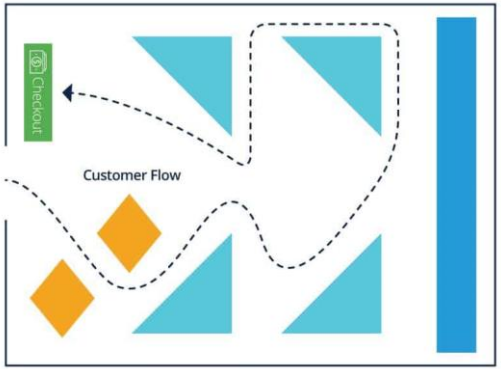


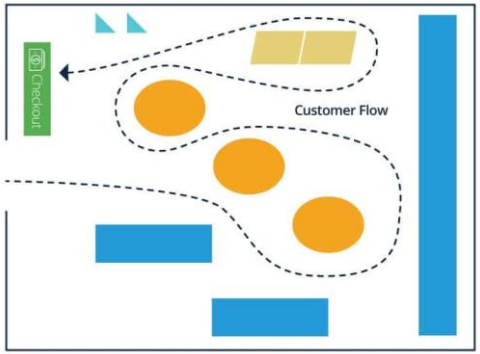
Efficient, simple to plan, and capable of creating individual spaces for the customer

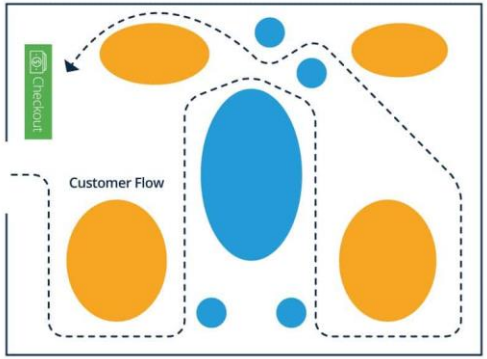
- Liquor stores
- convenience stores

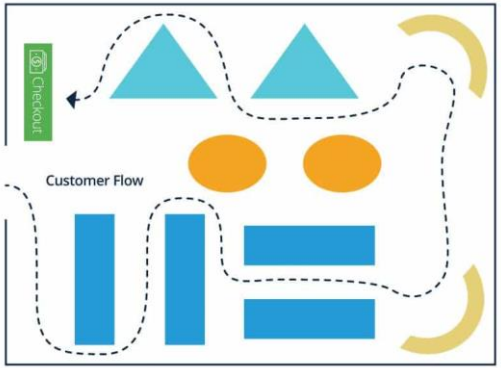
Essential Retail Store Layouts

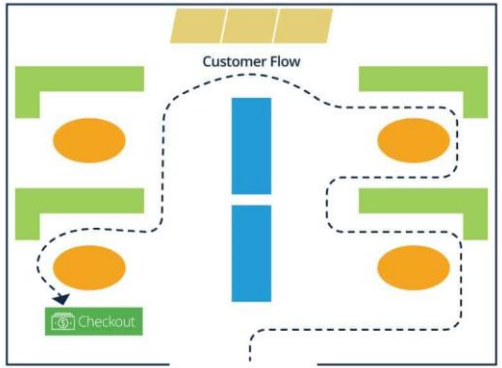








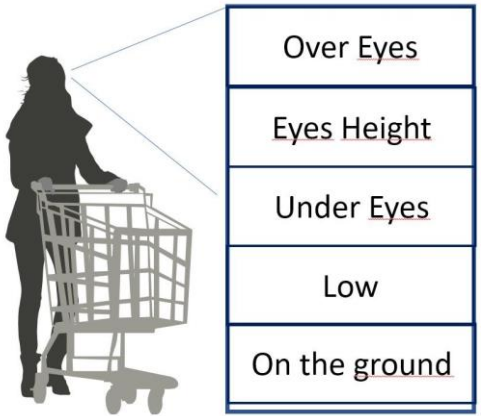


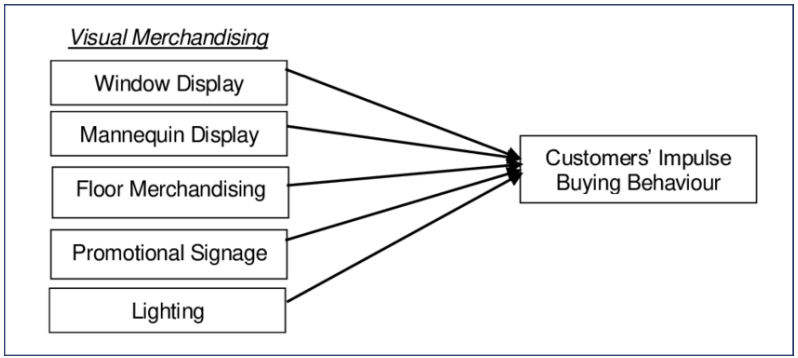


Planogram 101: The Ultimate Guide to Store Design

Planogram is the centre piece of Store design and visual merchandising.

A well-designed planogram can boost sales, cut costs, and improve your customer's overall experience

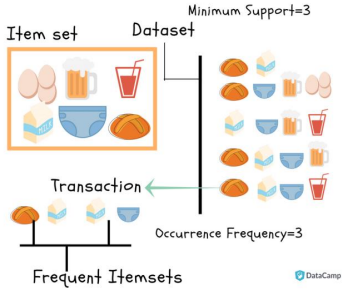




Planogram 101: The Ultimate Guide to Store Design

Maximize visual appeal

Increase cross sales



Sales per square foot

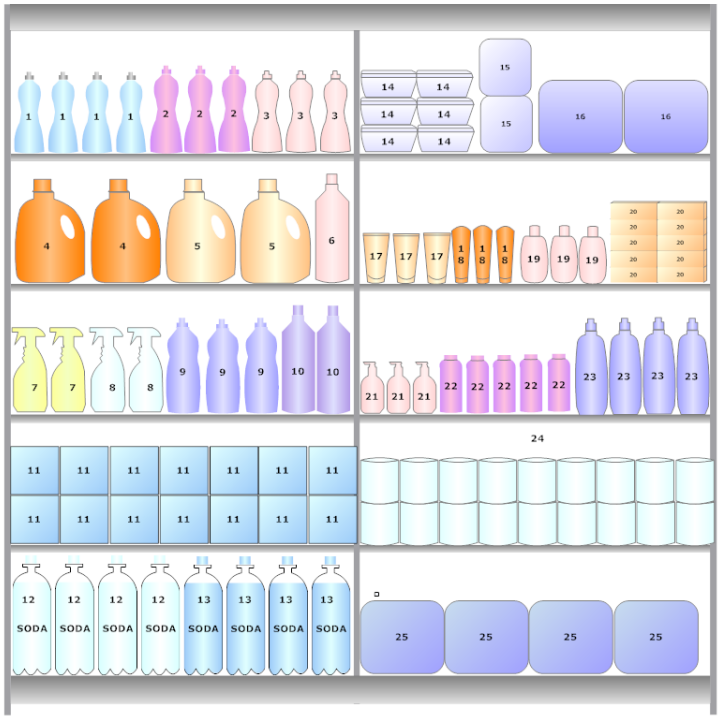
Restock more efficiently

Store layout excel exercise video here

Planogram 101: DIY (Do it yourself)

Household & Beauty
Shelf Display

Item	Product
1	Dish Soap with Bleach
2	Dish Soap - Antibacterial
3	Dish Soap - Fruit
4	Laundry Detergent
5	Laundry Detergent w/ bleach
6	Fabric Softener
7	Shower Cleaner
8	Window Cleaner
9	Easy Scrub
10	Pine Cleaner
11	Square Tissues
12	2 liter soda
13	2 liter soda - Diet
14	Baby wipes
15	Diapers - Travel Pack
16	Diapers
17	Face Wash
18	Sunscreen
19	Baby Lotion
20	Toothpaste
21	Hand Soap
22	Talcum Powder
23	Baby Wash
24	Toilet Paper
25	Diapers



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https://www.smartdraw.com/planogram/examples/shelf-display-planogram/

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