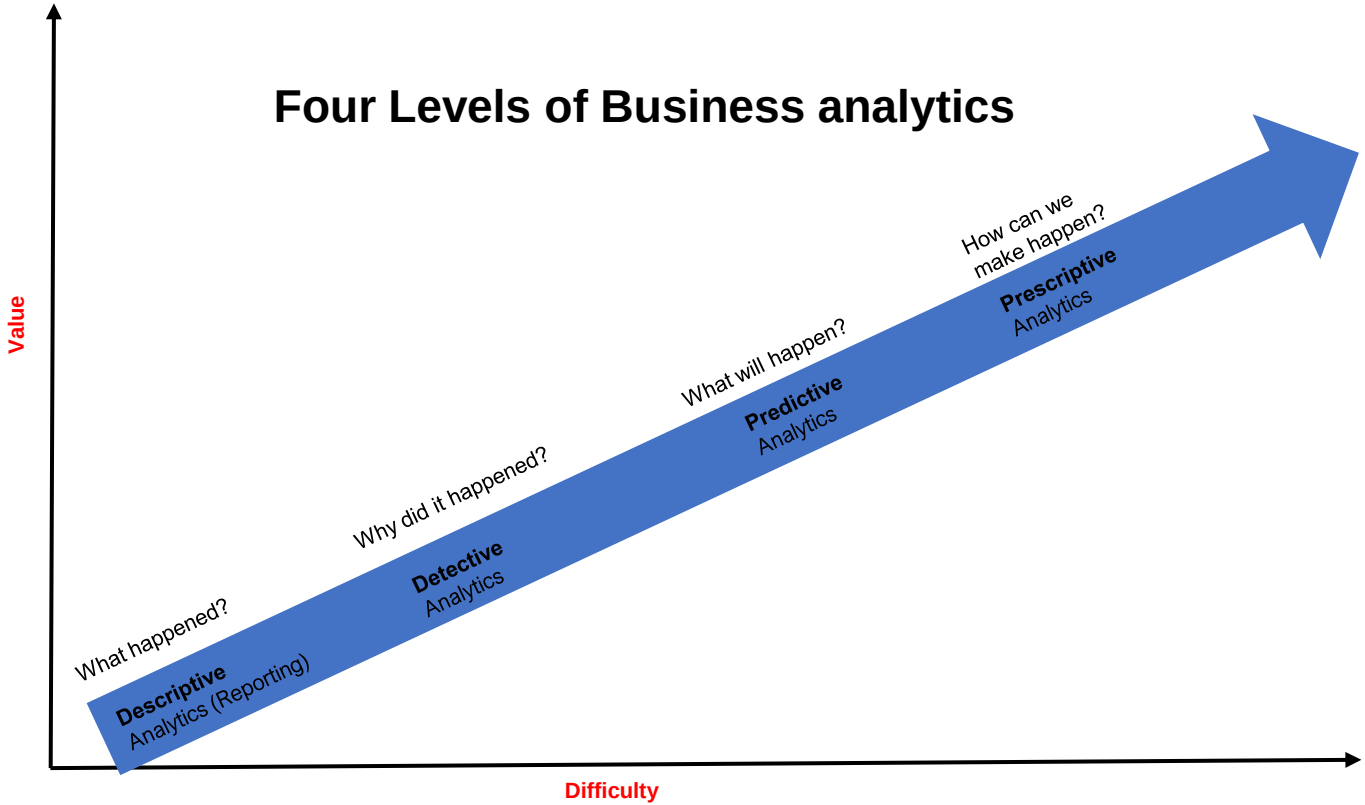
My story - Something about myself

- **Bachelor of Engineering**
- **Merchandising planner at Tesco**
- **Rotman MBA at UofT, and graduated in 2015**
- **No previous data science work experience**
- **Data scientist at Capital One Canada, a bank specializing in credit cards and known for its data-driven approach**
- **Credit risk management & machine learning modelling at RBC**

WeCloud Data

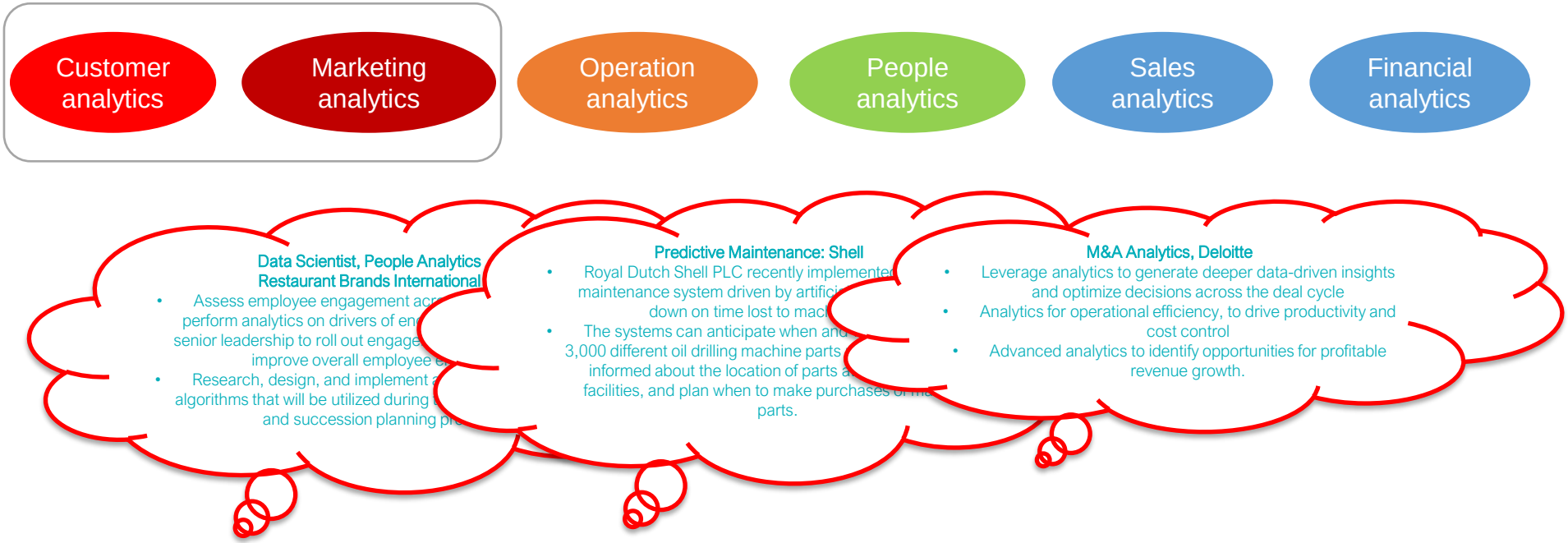
BA – Business Analytics Definition

Business analytics is the process of collating, sorting, processing, and studying business data, and using statistical models and iterative methodologies to **transform data into business insights**



BA – Business Analytics Definition

The goal of business analytics is to determine which datasets are useful and how they can be leveraged to solve problems and **increase efficiency, productivity, and revenue**



What is Marketing Analytics

Marketing analytics is the practice of collecting, managing and **analyzing marketing data** to measure marketing programs' effectiveness and optimize **return on investment (ROI)**

With marketing analytics, you can answer questions like these:

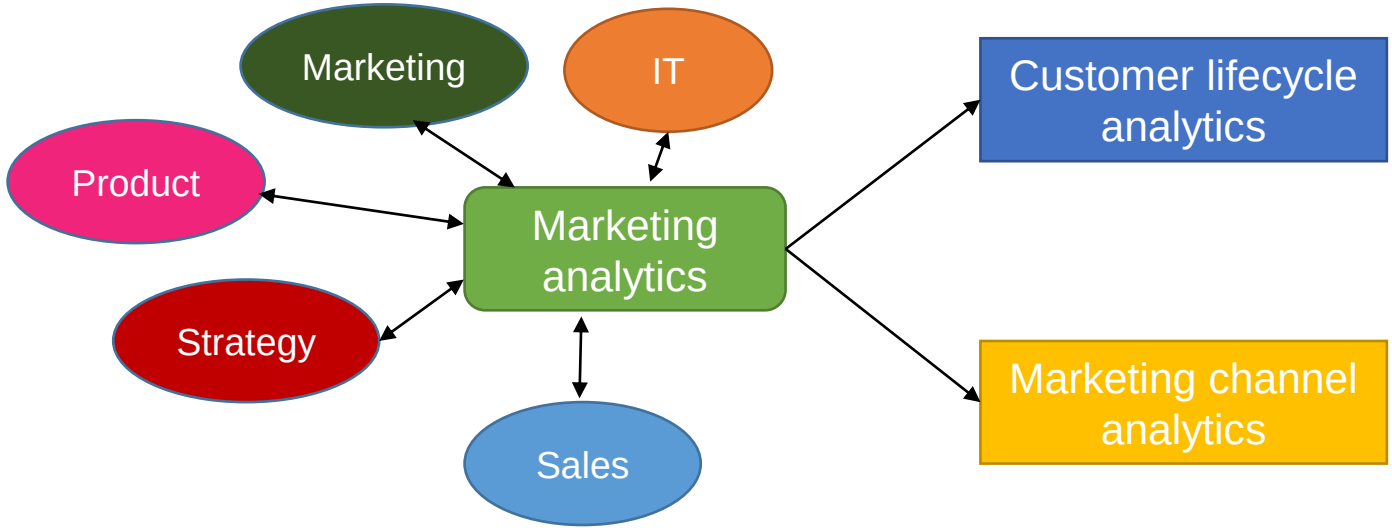
- *How are our marketing campaigns performing today? How about in the long run?*
- *What can we do to improve them?*
- *What should we do next? Are our marketing resources properly allocated?*
- *Are we devoting time and money to the right channels?*
- *How should we prioritize our investments for next year?*

Two important components of Marketing analytics:

1. **Data analytics skills**
2. **Business metric**

What is Marketing Analytics

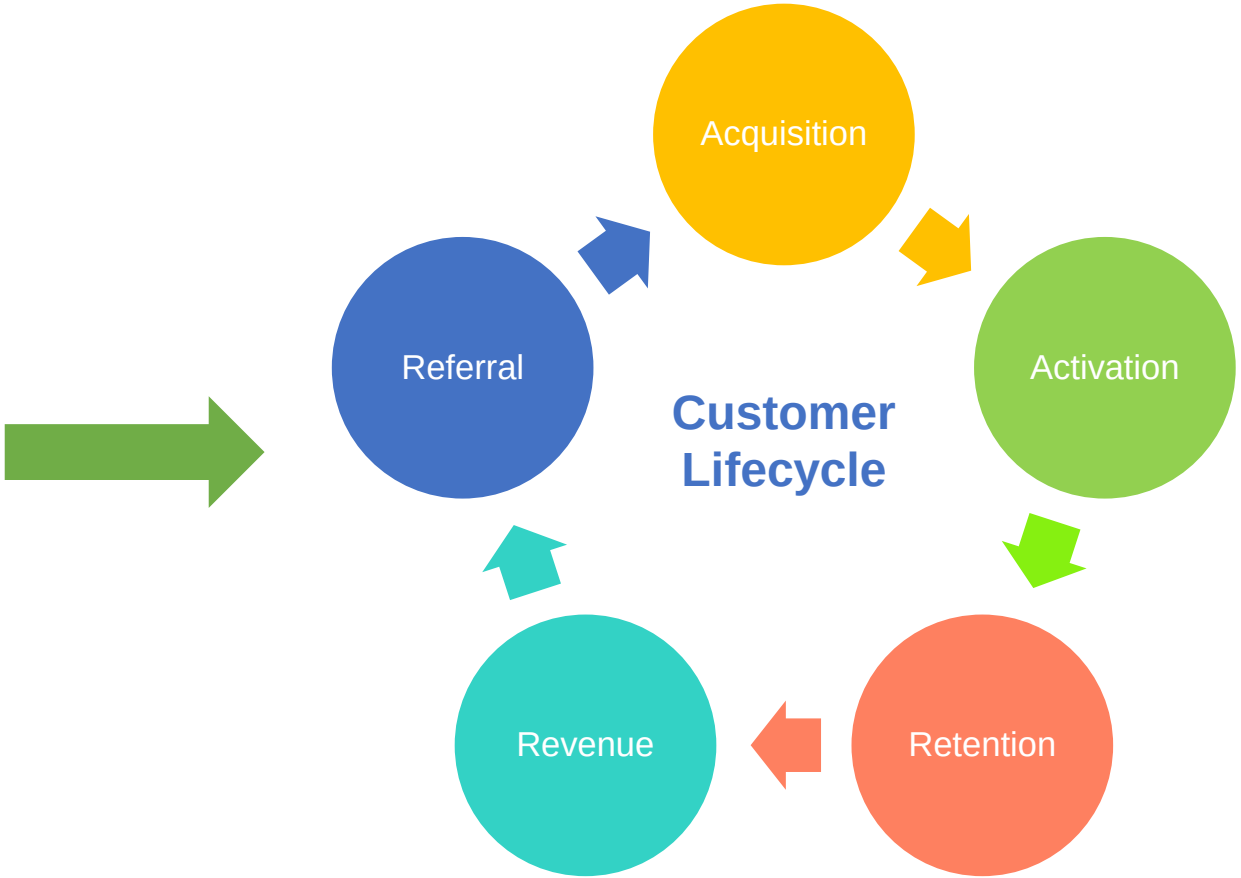
Marketing analytics can be broken down into 2 areas and requires lots of cross-functional work



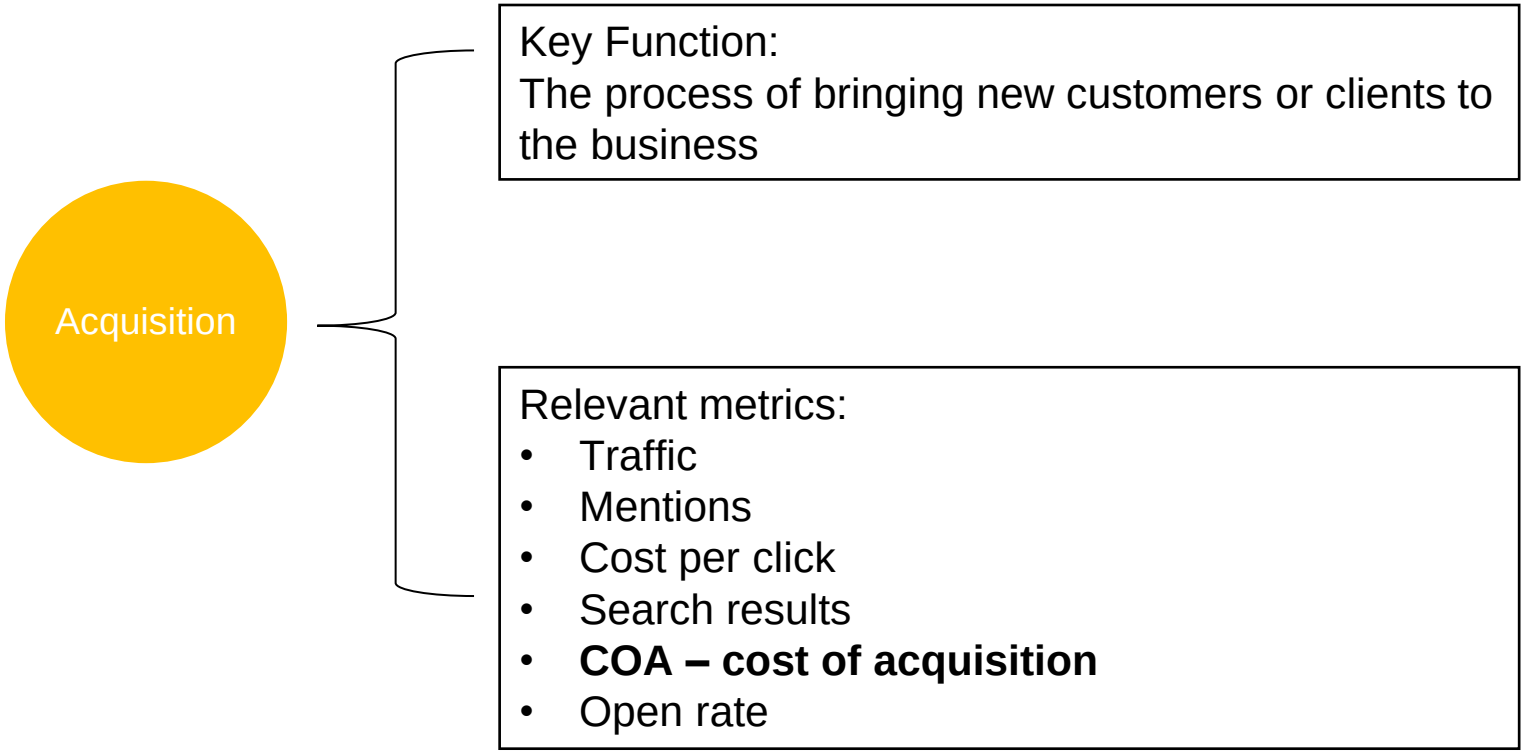
CRM – Customer Relationship Management

Customer Types / Business Lines

- Retail (Individual Customer)
- Wholesale



CRM – Customer Relationship Management



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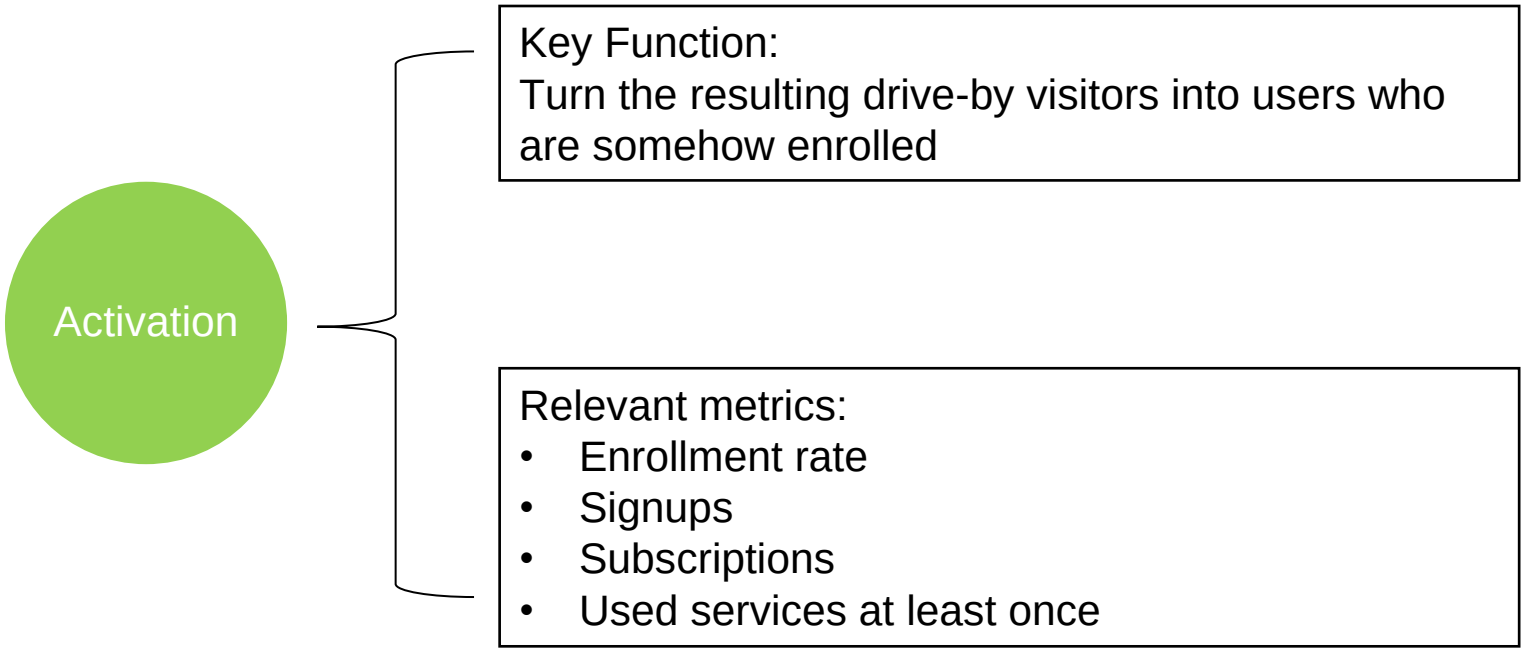
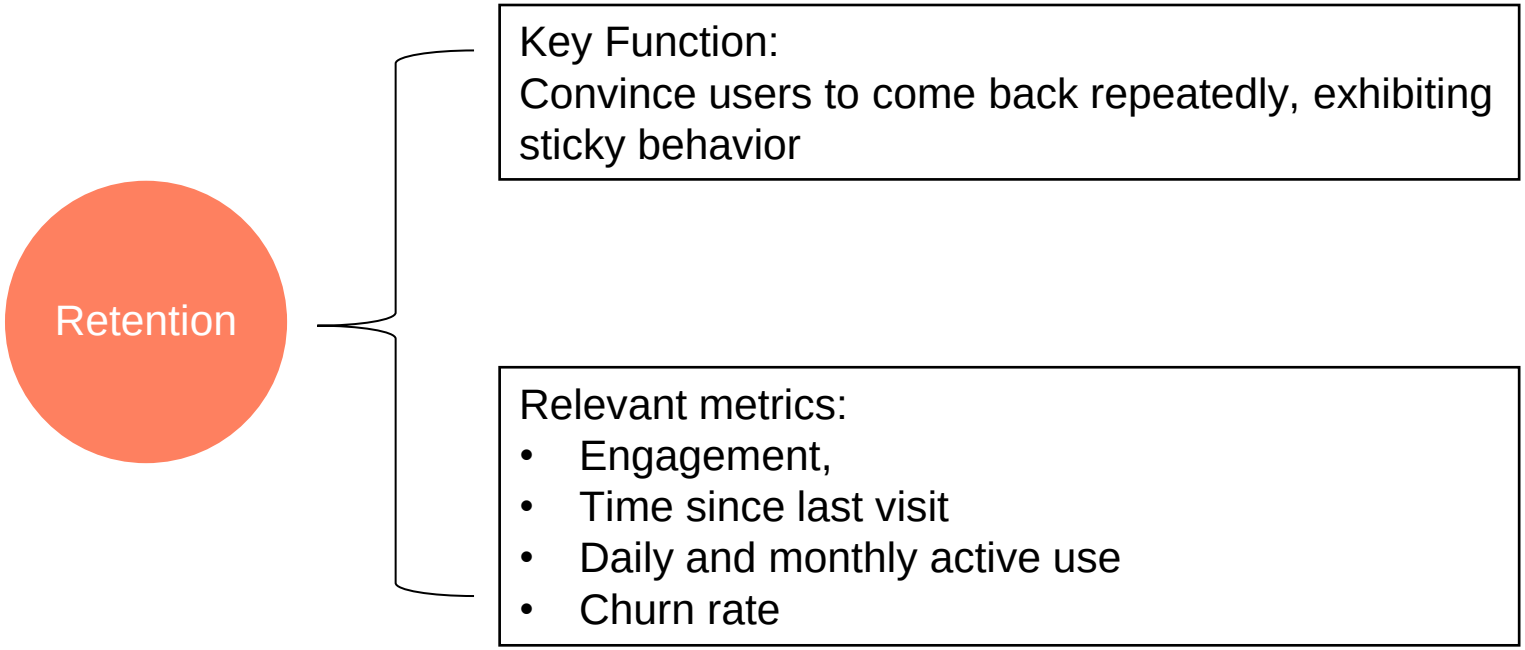
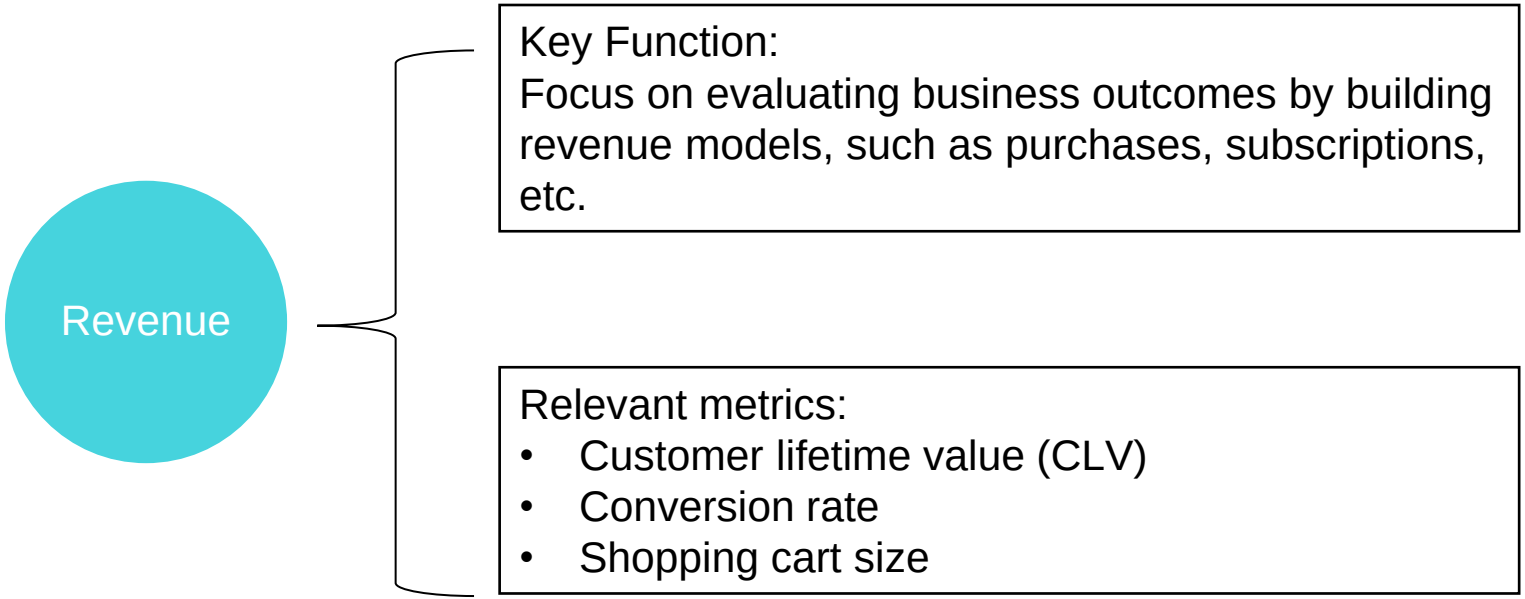


CRM – Customer Relationship Management



CRM – Customer Relationship Management



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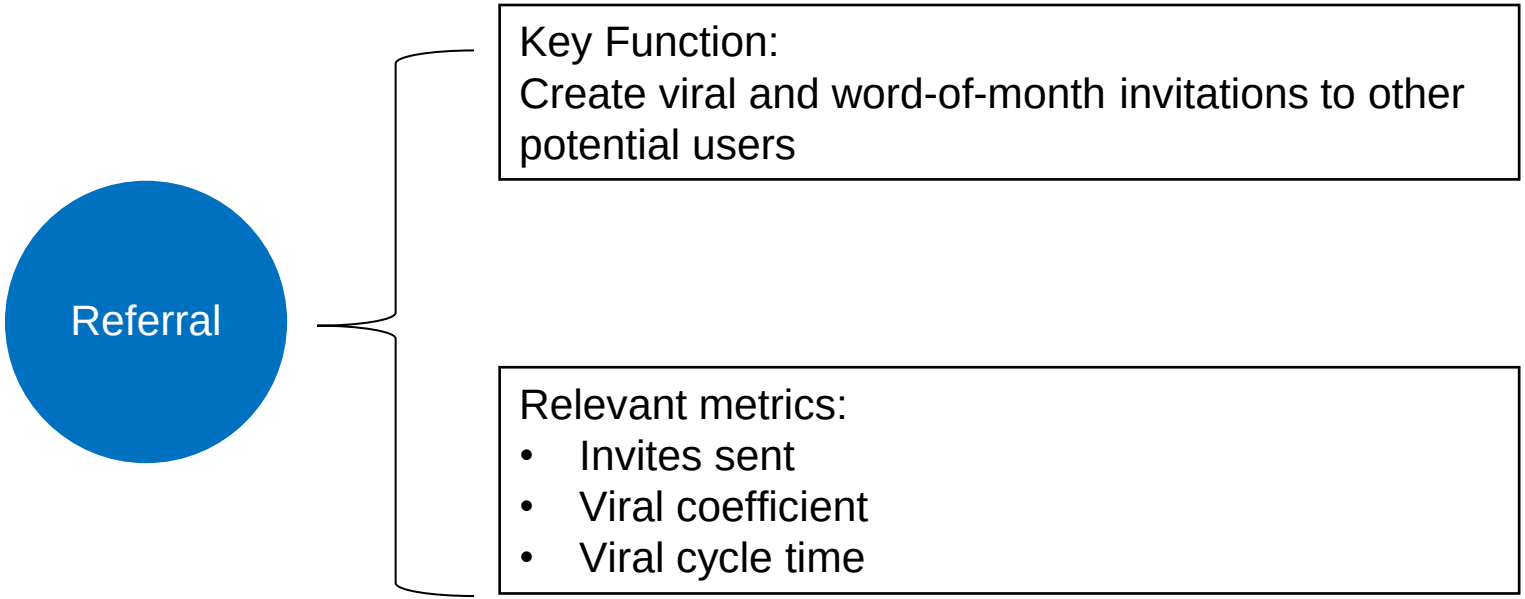
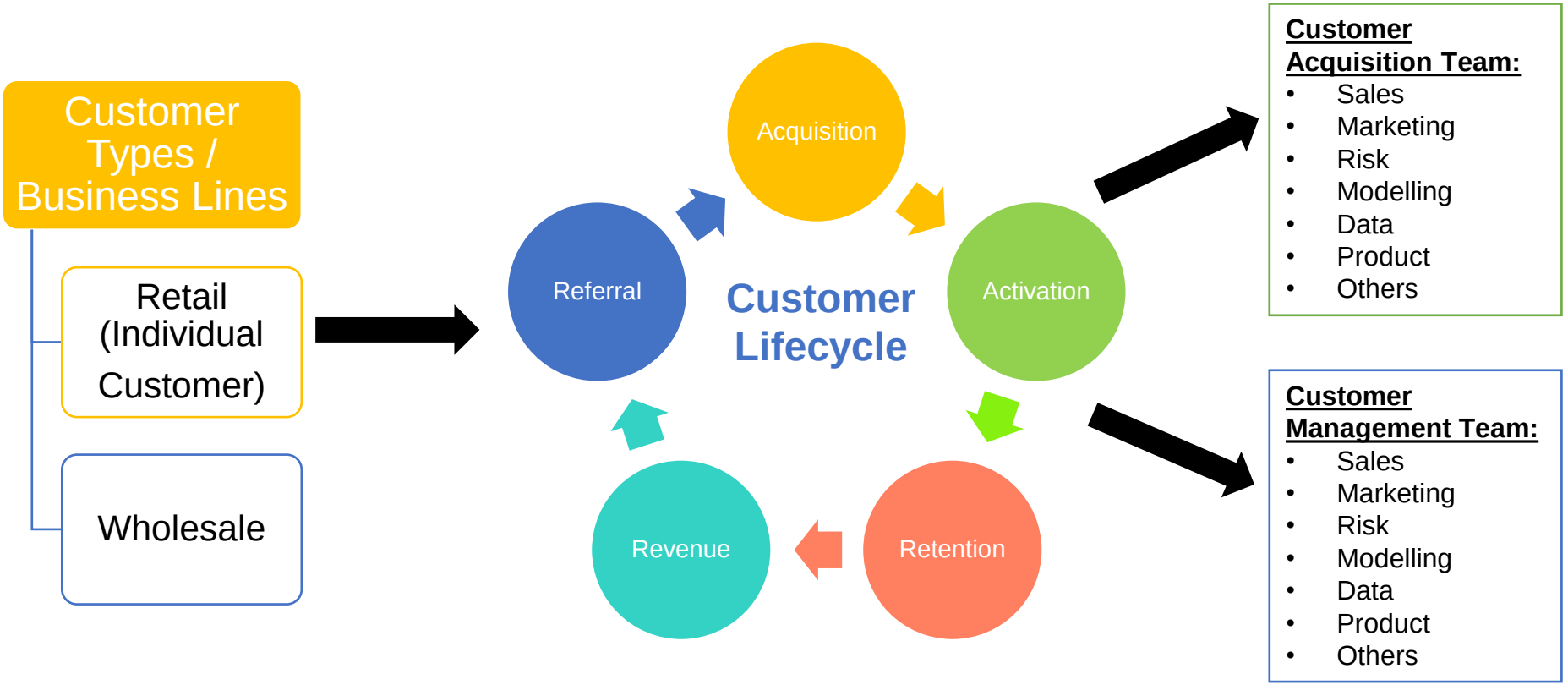
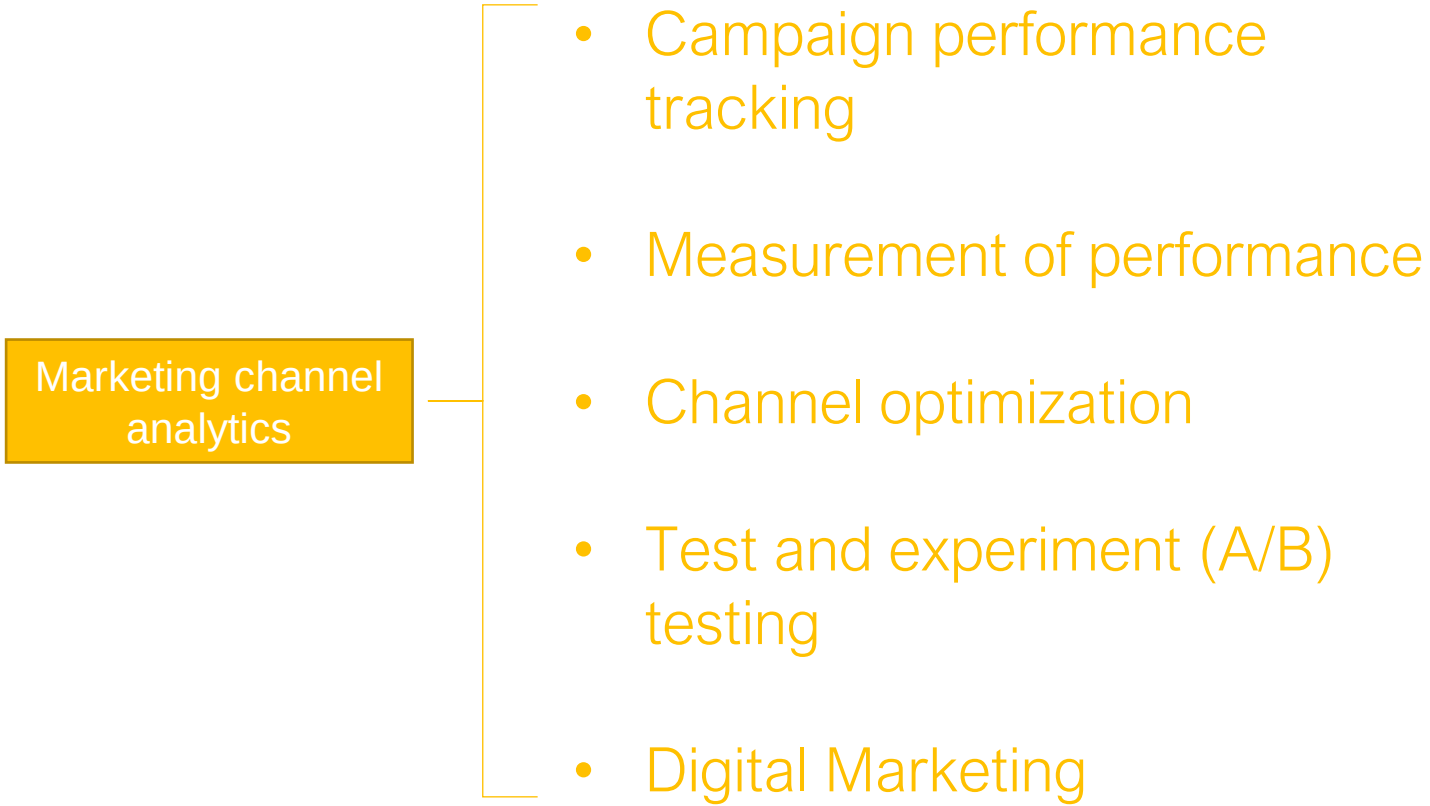


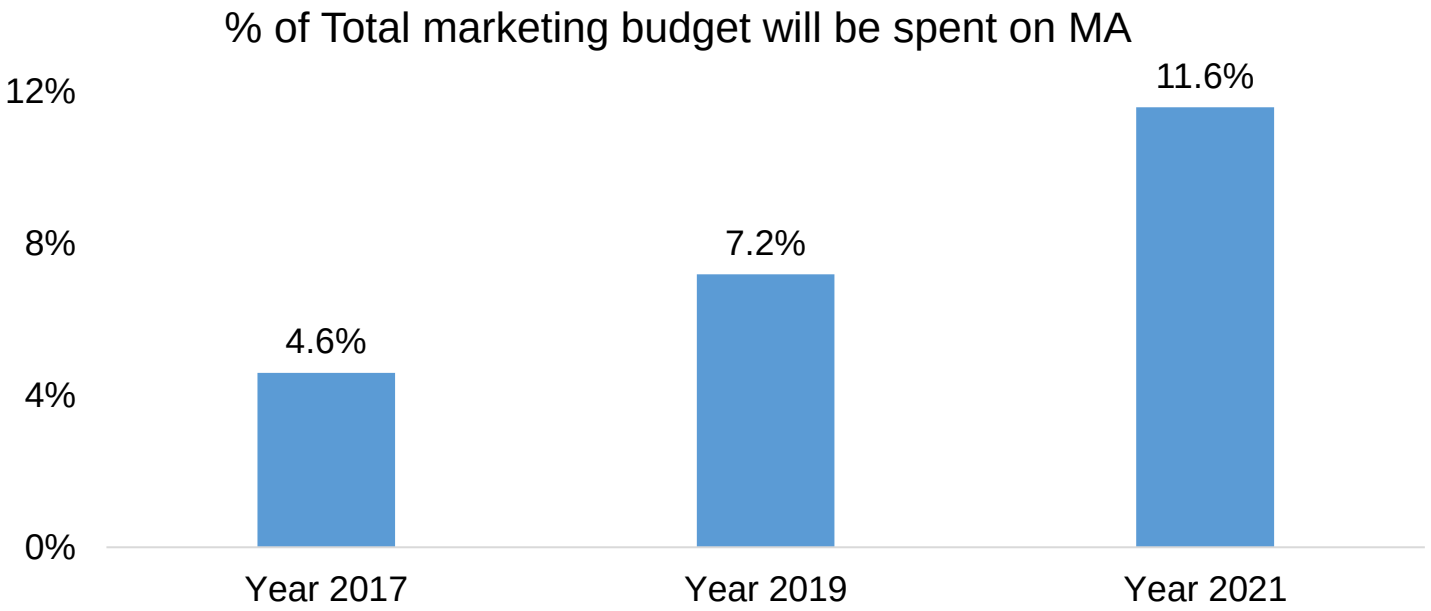
CRM – Customer Relationship Management



Marketing Channel Analytics



Why Marketing analytics

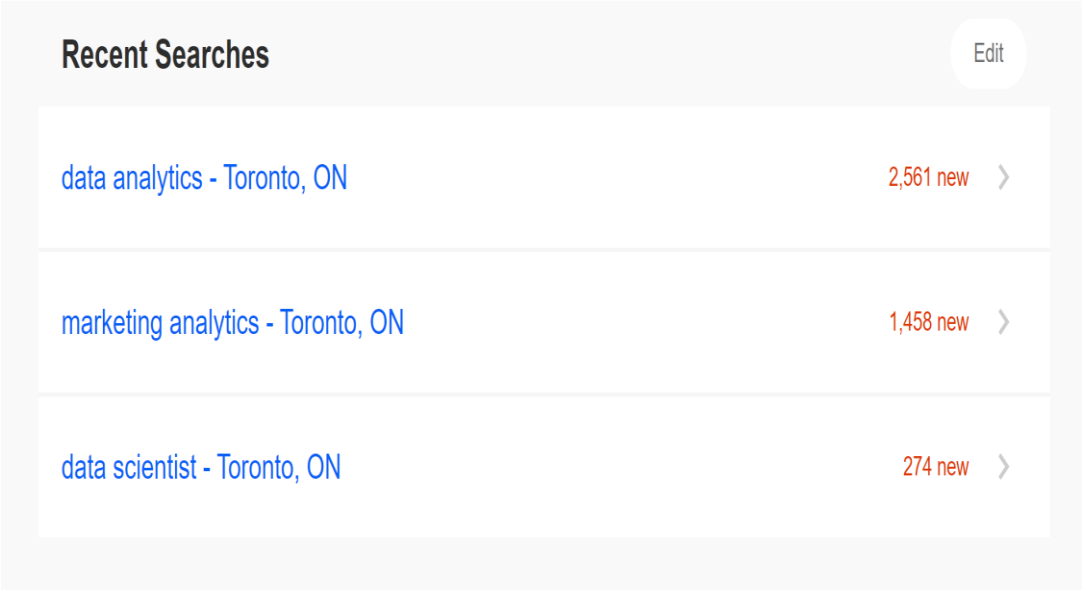


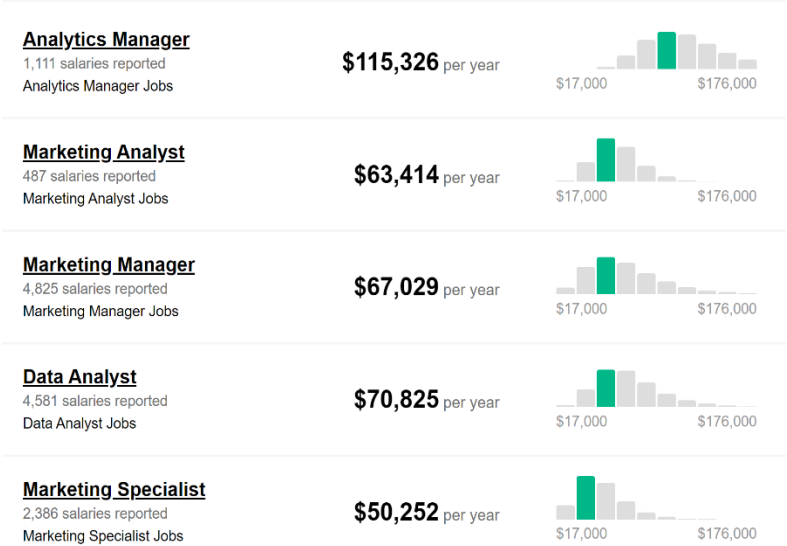
Marketing leaders also report a 27% increase in the use of **artificial intelligence and machine learning** in their toolkits over 2018 levels and expect this level to increase another 60% within three years

Source: 2019 CMO (Chief Marketing Officer) Survey from 400+ big U.S. companies

Why Marketing analytics

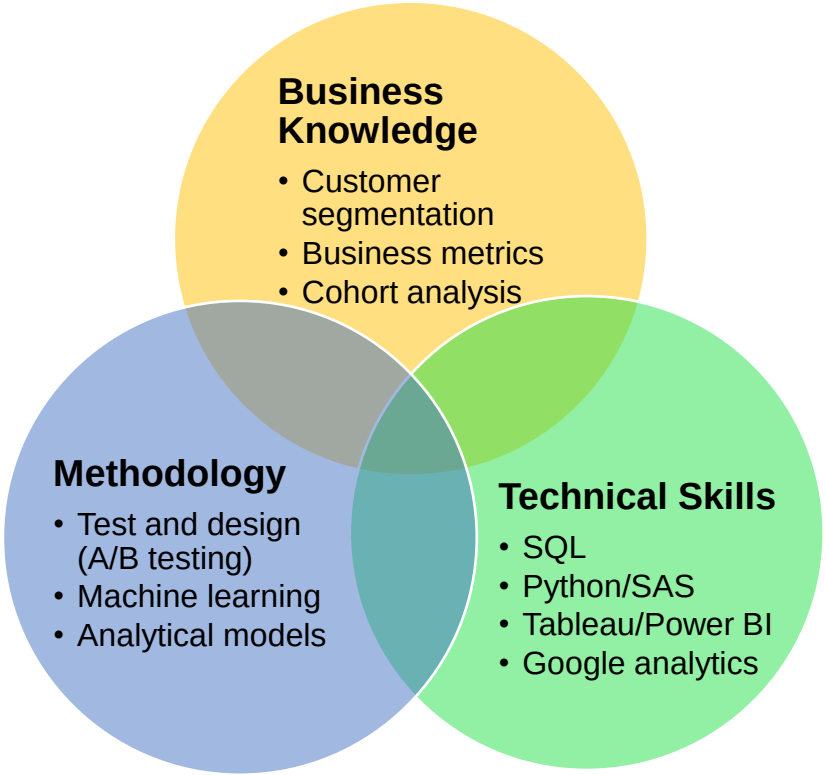
More analytics job openings from Marketing analytics across different industries





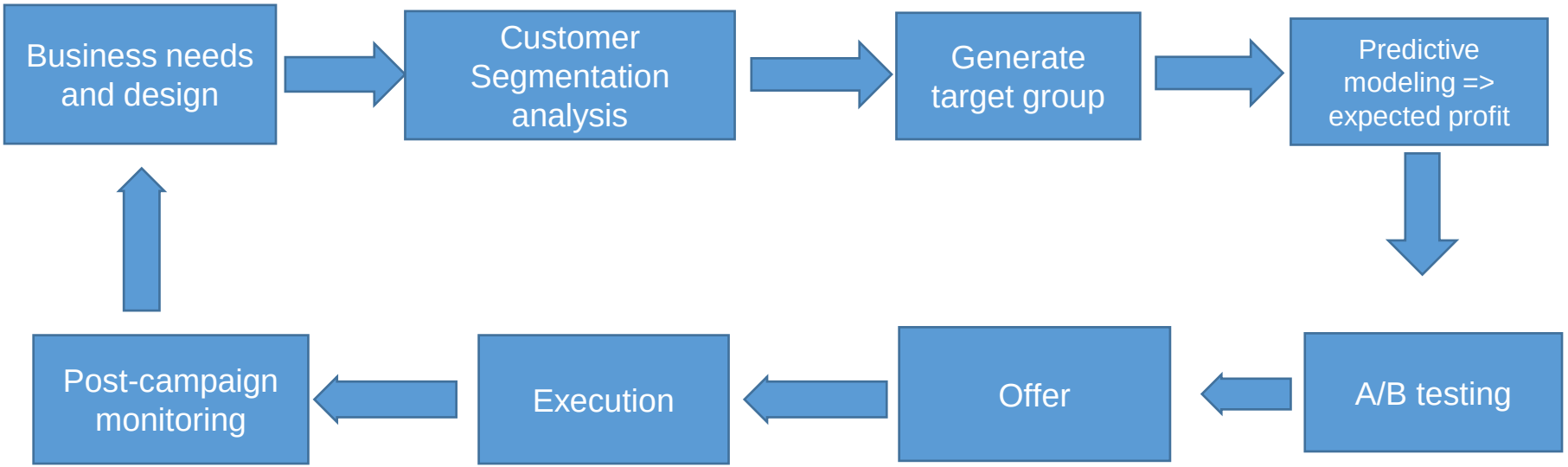
Source: Indeed

Skills you need for Marketing analytics



Source: Indeed

An end-to-end marketing campaign process



Product Recommendation System

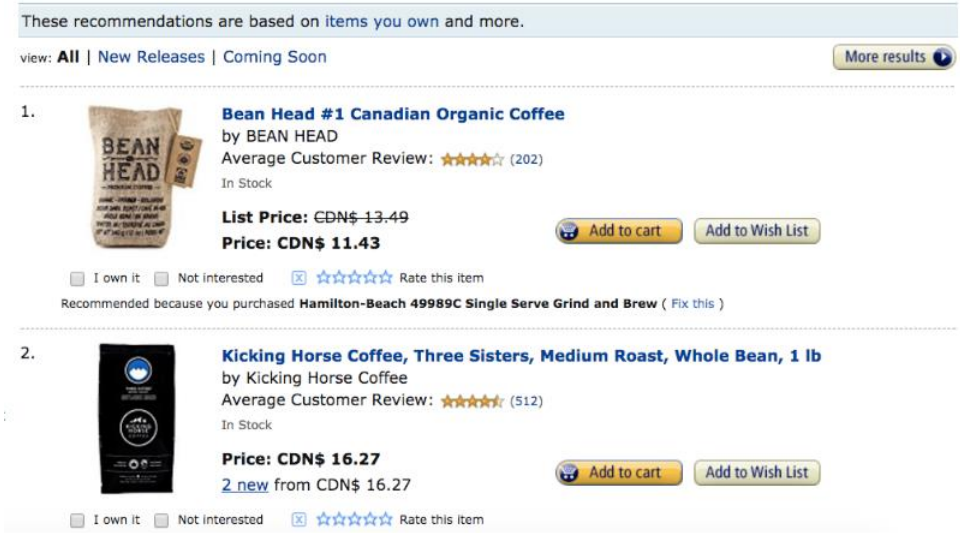
A **product recommendation** system is a system with the goal of predicting and compiling a list of items that a customer is likely to purchase

Various business use cases:

- music streaming service
- e-commerce company, Amazon, utilizes recommendation systems to predict and show a list of products that a customer is likely to purchase
- media service provider, Netflix, uses recommender systems to recommend movies or TV shows for individual users that they are likely to watch

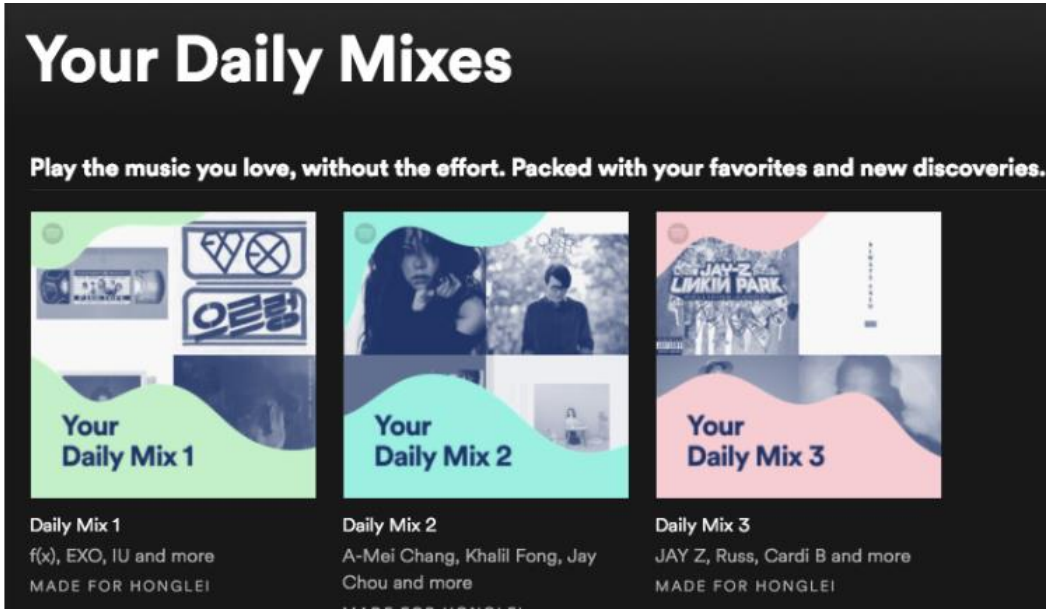
The usage of a recommender system does not stop here. It can also be used to recommend related articles, news, or books to users

Product Recommendation System



According to McKinsey & Company, 35% of Amazon's revenue is generated by its recommendation engine

Product Recommendation System



The new recommendation system has helped Spotify increase its number of monthly users from 75 million to 100 million at a time, in spite of competition from rival streaming service Apple Music.

Product Recommendation System

There are typically two ways to produce a list of recommendations:

- **Collaborative filtering:** The basic **assumption** behind the collaborative filtering method is that those who have viewed or purchased similar contents or products in the past are likely to view or purchase similar kinds of contents or products in the future
- **Content-based filtering:** The basic **assumption** behind the content-based filtering method is that the users are likely to view or purchase items that are similar to those items that they have bought or viewed in the past.

What is Churn Rate

Churn Rate is the percentage of people who abandon your service over time

	Jan	Feb	Mar	Apr	May
Users					
Starting with	50,000	53,000	56,300	59,930	63,920
Newly acquired	3,000	3,600	4,300	5,280	6,299
Total	53,000	56,600	60,620	65,110	70,141
Monthly growth rate of new users%		20%	19%	23%	19%
Active users					
Starting with	14,151	14,900	15,690	16,642	17,816
Newly active	849	900	1,079	1,297	1,556
Total	15,000	15,800	16,769	17,939	19,372
Monthly conversion rate		2.4%	2.6%	3.0%	3.3%
Paying users					
Starting with	1,000	1,035	1,084	1,142	1,219
Newly acquired	60	72	86	104	124
Lost	25	23	28	27	32
Total	1,035	1,084	1,142	1,219	1,311
Monthly Churn rate		2.2%	2.6%	2.4%	2.6%

Churn Rate = (Number of churns during period) / (Number of customers at beginning of period

Question: what does 1/(churn rate) mean?

What is Customer Lifetime Value (CLV)

The **lifetime value of** a customer, or customer lifetime value (CLV), represents the total amount of money a customer is expected to spend in your business, or on your products, during their lifetime

- *CLV gives you crucial insight into how much money you should be spending on acquiring your customers by telling you how much value they'll bring to your business in the long run*
- *With CLV you'll be able to understand which customers you should be focusing on and, more importantly, why you should be focusing on them?*

Therefore, CLV is a clear look at the ***benefit of acquiring and keeping any given customer***

How to calculate CLV

Step One – Segment customers with RFM model:

- ***Recency*** *- the last time that a customer made a purchase.*

  A customer who has made a purchase recently is more likely to make a repeat purchase than a customer who hasn't made a purchase in a long time

- ***Frequency*** *- how many times a customer has made a purchase within a given time frame.*

  A customer who makes purchases often is more likely to continue to come back than a customer who rarely makes purchases

- ***Monetary Value*** *- the amount of money a customer has spent within that same time frame.*

  A customer who makes larger purchases is more likely to return than a customer who spends less.

Therefore, by segmenting your customers with RFM, you'll be able to ***analyze each group individually and determine which set of customers has the highest CLV***

Source: https://www.shopify.ca/blog/customer-lifetime-value

How to calculate CLV

Step Two – Give a score for each variable (RFM variables) and create segment based on RFM:

- *Assign customer's recency, frequency, and monetary value each a value on score of 1 to 3*
- *Think of these three values as categories: 1 being the least valuable, 2 being somewhat valuable, and 3 being the most valuable*
- *When sorting data, ⅓ of customers will get assigned a score of 1, the ⅓ above that will get a 2, and so on*

	A	B	C	D	E
1		Recency	Frequency	Monetary Value	
2	Customer A	1	2	1	
3	Customer B	3	1	1	
4	Customer C	2	3	2	
5	Customer D	1	2	1	
6	Customer E	2	1	3	
7	Customer F	2	1	3	
8	Customer G	1	1	2	
9	Customer H	1	1	3	
10	Customer I	2	3	1	
11	Customer J	3	2	1	
12	Customer K	3	4	2	
13	Customer L	3	3	1	
14	Customer M	3	2	1	
15	Customer N	3	1	1	
16	Customer O	2	2	1	
17	Customer P	1	2	1	
18					
19					

Source: https://www.shopify.ca/blog/customer-lifetime-value

How to calculate CLV

Step Two – Give a score for each variable (RFM variables) and create segment based on RFM:

- *Add up the score for each customer and list a total under RFM Score*
- *Sort data by RFM Score and divide results by highest (shown here in red), middle (orange), and lowest score (yellow)*
- ***The highest scoring results will be your most valuable customer segment***

	A	B	C	D	E
1		Recency	Frequency	Monetary Value	RFM Score
2	Customer K	3	3	2	8
3	Customer C	2	3	2	7
4	Customer L	3	3	1	7
5	Customer E	2	1	3	6
6	Customer F	2	1	3	6
7	Customer I	2	3	1	6
8	Customer J	3	2	1	6
9	Customer M	3	2	1	6
10	Customer B	3	1	1	5
11	Customer N	3	1	1	5
12	Customer O	2	2	1	5
13	Customer A	1	2	1	4
14	Customer D	1	2	1	4
15	Customer G	1	1	2	4
16	Customer H	1	1	3	4
17	Customer P	1	2	1	3
18					
19					

Source: https://www.shopify.ca/blog/customer-lifetime-value

How to calculate CLV

Step Three – Calculate the Customer Lifetime Value for each customer segment

- *Average Order Value per customer :*

  Average Order Value = Total Sales / Order Count

- *Purchase frequency per customer :*

  Purchase Frequency = Total Orders / Total Customers

- *Customer Value per customer:*

  Customer Value = Average Order Value x Purchase Frequency

- *CLV per customer :*

  CLV = Customer Value x Average Customer Lifespan

Average Customer Lifespan = 1/(churn rate)

Source: https://www.shopify.ca/blog/customer-lifetime-value