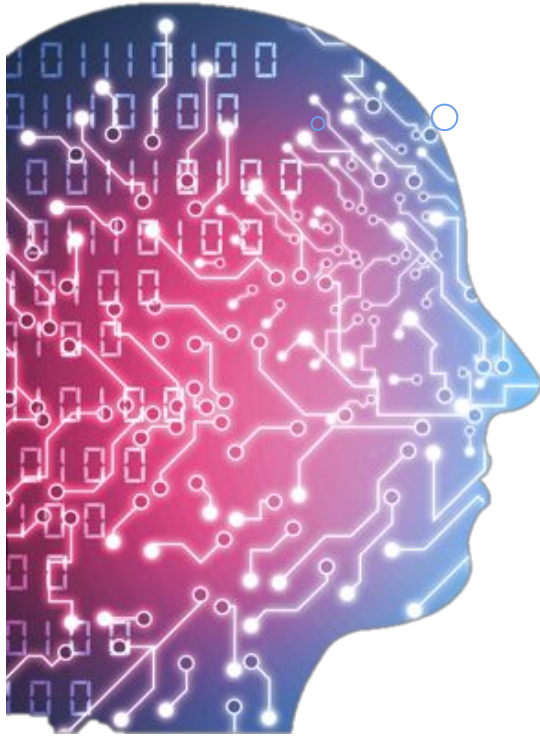# amazon

Data Insight   Root Cause Analysis   Customer Segmentation

By: Team 03

What should we look for when we do data explore?

Data Insight!

Find Amazon Anomalies

Detect: Linear regression
Green Line: a moving average trendline
Light Green: confidence interval (light green)

Automatically detect it
Calculate the **residuals**
for each point
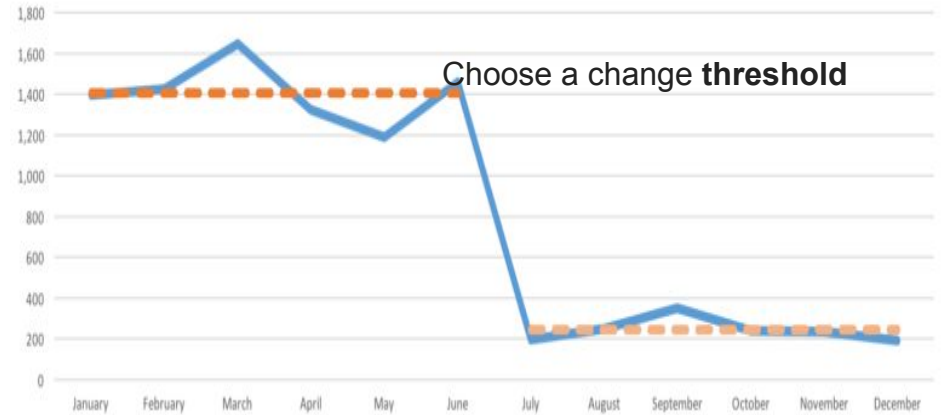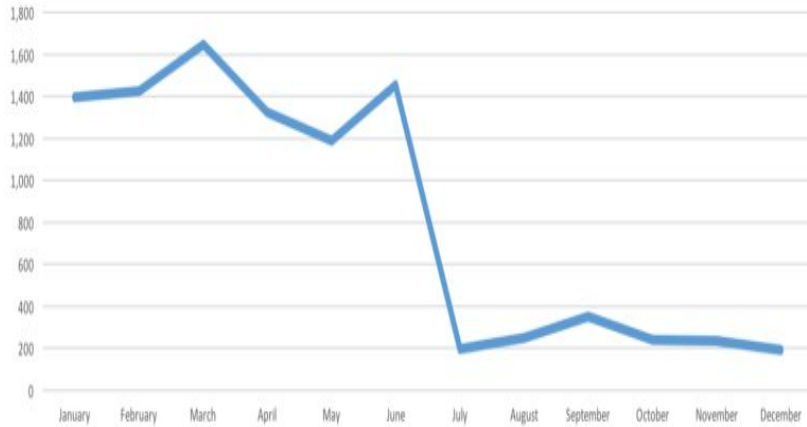
Obvious indications that something is changing, because there must be some cause for the metric to shift so significantly away from the previous pattern
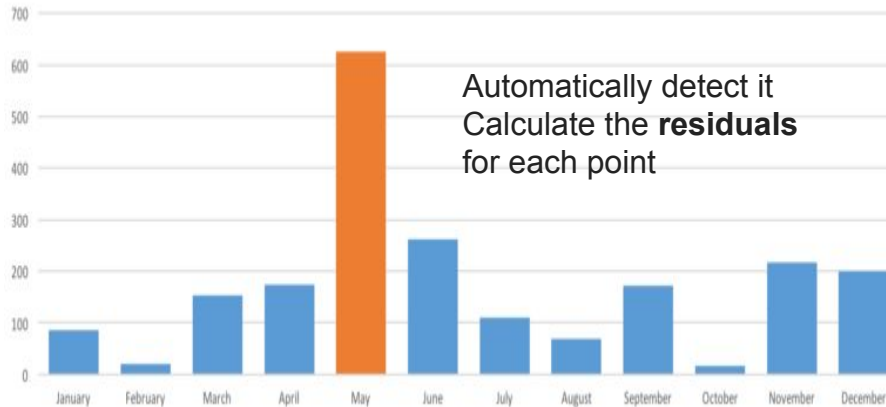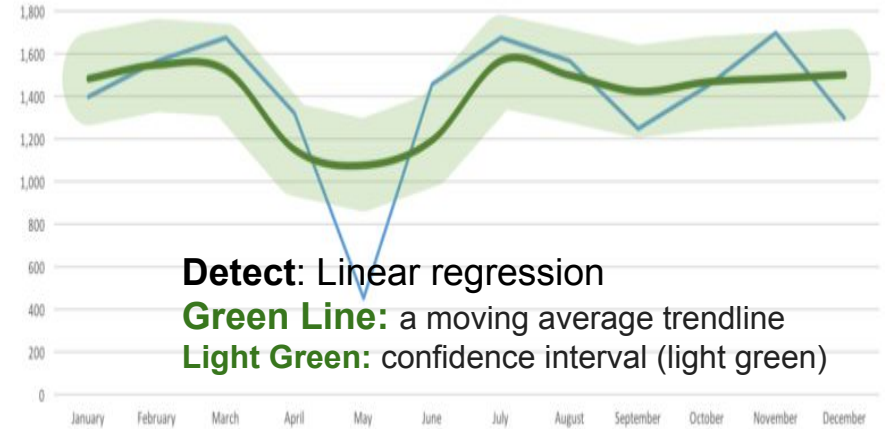
Find New Trends

Find the Changing relationships

- Over time, lines were highly correlated
- Correlation was broken
- A serious shift in business
- Possible Reasons:
  Emerging Trends?
  Clustered Insights?
  Changes in Seasonality?

Investigate relationships between metrics that are important for Amazon!!! -- Sales/ Customers (lifetime value)

ROOT CAUSE ANALYSIS

To understand underlying causes of the change (especially unexpected ones)

For example:

Root cause for a particular problem/change can be more than one:
- Competitor reduced priced
- Season Sensitive products
- Population of particular customer segment is less.

Implementation
- This is an example text.
- You can edit it.

Corrective Action
- This is an example text.
- You can edit it.

Analysis & Identification
- This is an example text.
- You can edit it.

Investigation & Understanding
- This is an example text.
- You can edit it.

Evidence & Proof

Failure
- This is an example text.
- You can edit it.
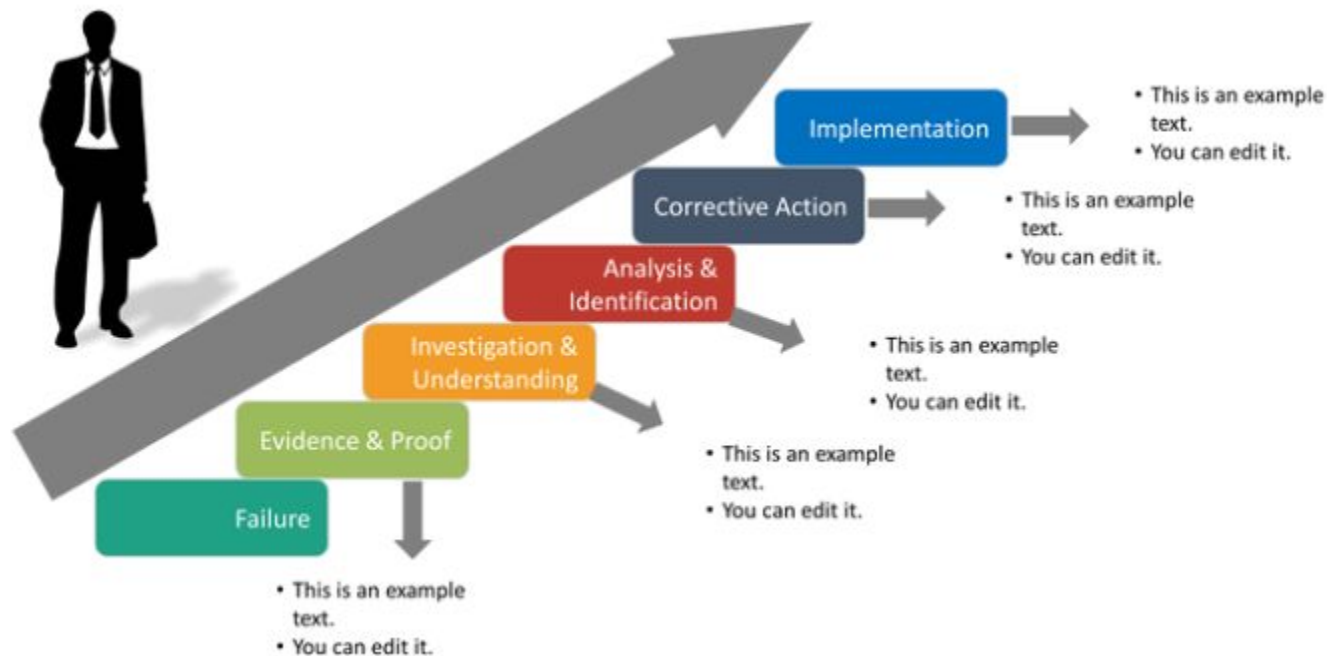
IDENTIFYING FACTORS

Identifying Factors for causing Change:

- Internal: Within the organization
- External: These are things that happen to you, regardless if you want them to or not.

SORTING FACTORS

- Selecting the right factors for the current situation

CLASSIFYING FACTORS

Shorter list of potential factors/causes

- Correlated factor: Side-effect of the root cause
- Unrelated factor: Suspicious factors
- Contributing factor: Two or more interrelated factors
- Root cause: factor that initiated the chain of events that resulted in the change

LIKELIHOOD FACTORS IN TIMELINE

No Proper Market campaign/Promotions/offers/coupons for the sales

February

Launch of new product

April

March

Competitor reduces prices

August

No of purchases decreased with revenue reduction

DESIGNING THE ROOT CAUSE ANALYSIS

- Recording actions
- Tracking external forces
- Segmenting the data
- Mapping the process

IMPLEMENTATION

With the Root cause analysis,we will be investigating the root factor to the problem in the sales of amazon products with proper verification and once the root cause is identified it will be ready for exploration of solution. The main purpose for performing this analysis is that there won't be recurrence of problem in the future We will be implementing by creating EDA using python notebook and more interactive dashboards on tableau to get clear picture and proof of the root cause.

We will be focusing on the uneven sales of electronic products in different regions of United States.and will explore the internal and external factors affecting the sales during a particular period and how we can come up with a proper solution.

Customer Segmentation

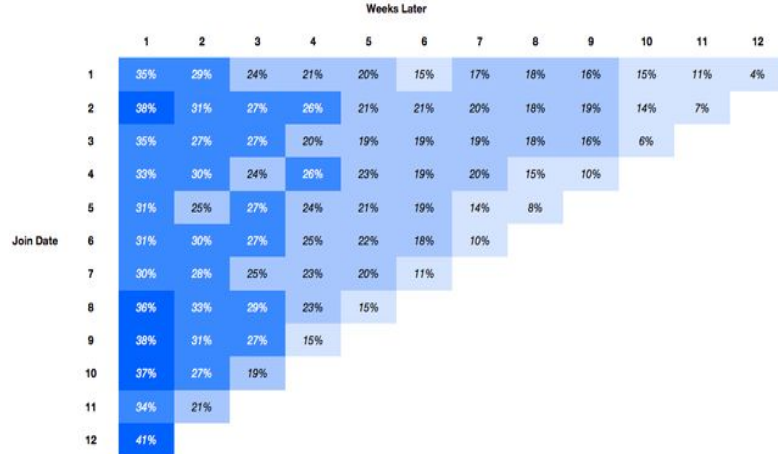Key findings: Why do we need Customer Segmentation?

- Not all customers are equal
- We segment customers for deeper analytics
- Customers make up many different groups that have different interests, needs and requirements
- The better you understand the core segments that make up your larger customer base, the better you can understand how your business might change in the future.
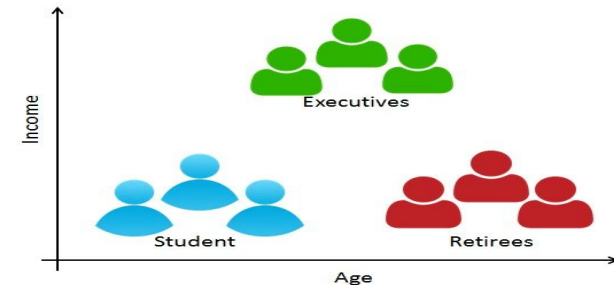
How do we create segments?
1. Cohorts:

What are Cohorts?

- Group the customers by the date they started using your product or service for the first time.
- All of the customers that started at the same time are considered a cohort, and the longer you are in business the more cohorts you will have.

						Weeks Later						
	1	2	3	4	5	6	7	8	9	10	11	12
1	35%	29%	24%	21%	20%	15%	17%	18%	16%	15%	11%	4%
2	38%	31%	27%	26%	21%	21%	20%	18%	19%	14%	7%	
3	35%	27%	27%	20%	19%	19%	19%	18%	16%	6%		
4	33%	30%	24%	26%	23%	19%	20%	15%	10%			
5	31%	25%	27%	24%	21%	19%	14%	8%				
Join Date 6	31%	30%	27%	25%	22%	18%	10%					
7	30%	28%	25%	23%	20%	11%						
8	36%	33%	29%	23%	15%							
9	38%	31%	27%	15%								
10	37%	27%	19%									
11	34%	21%										
12	41%											

How to Cohort Customers?

- **Days** if you have a product that is growing very quickly and changes a few times a week (e.g. mobile games).
- **Weeks** if you do not update your product more than once a week and your customer growth is relatively predictable (e.g. retail stores).
- **Months** if your business is stable and you are planning quarters (or years) in advance (e.g. enterprise software).
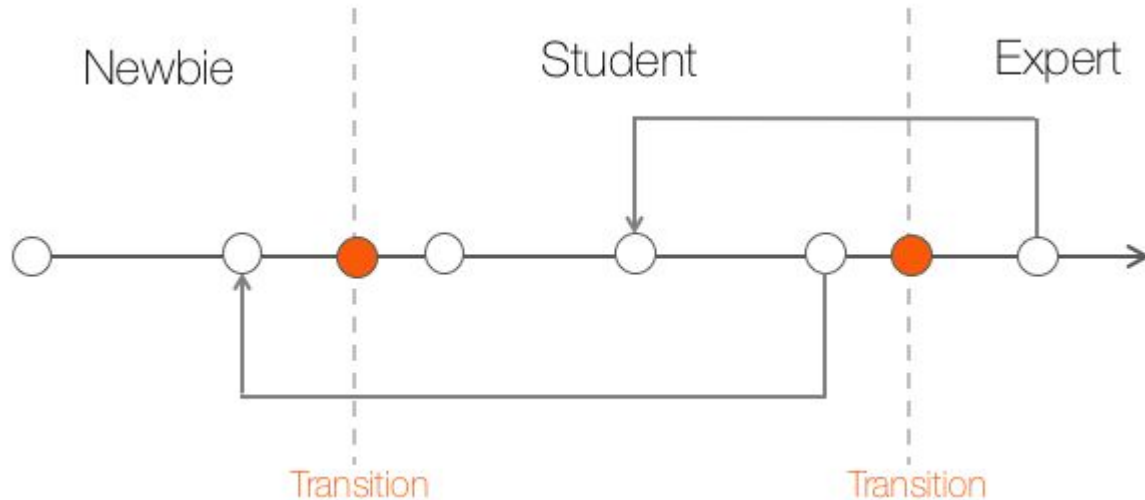
Customer Segmentation: Expertise

Learn from Experience

- Customers, like all people, change over time.
- The more a customer learns about your product or service the better they will make use of it and the more advanced their usage will become.

Mapping the evolution of a customer:

- **Newbies** – Are customers that are just learning to use your product.
- **Students** – Are customers that are very familiar with your product but are still learning.
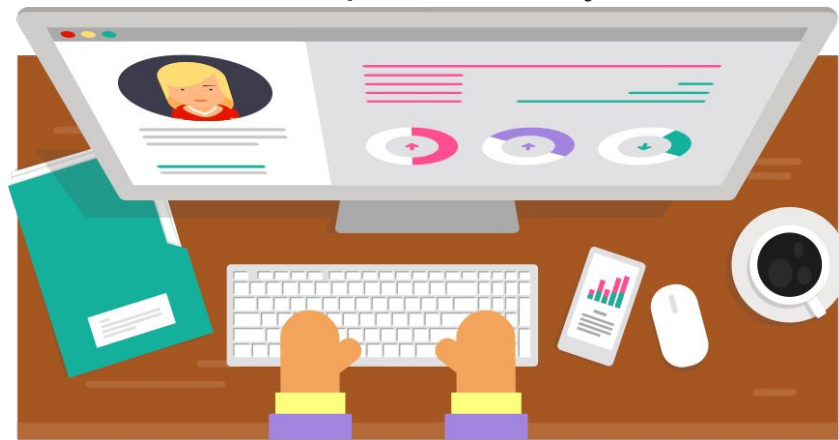- **Experts** – Are customers who have mastered your product.

Customer Segmentation: Activity

Staying Active

There are some obvious activity groupings you can use:

- **Daily Users** – use the product everyday.
- **Weekly Users** – use the product at least once a week.
- **Monthly Users** – use the product only a few times a month.

IMPLEMENTATION of Customer Segmentation

Depending on the observation we get from performing root cause analysis and data insight, we can make additional standardize to our customer dataset and perform customer segmentation accordingly to figure out who our most valuable customers are and improve customer stickiness.

Additionally, to gain deeper insights about our customer we can segment them by cohorts, by focusing on the sale of a single product and grouping our customers by order date, by expertise, by grouping the customers based on the frequency of products purchased and by activity by grouping the customers based on the recency of purchases.

All these implementations can be performed on an analytical tool like Tableau.

Part 2 -Goals to be achieved

1. Find a anomalies of monthly sales

    We will create the linear regression model from monthly sales according primacy categories in python, which can help the sales team to find and compare the anomalies of sales, then focus especially on high residuals to verify the impact of promotions, competition and advertising on sales in Tableau.

    A. Promotions are related to sales and are related to the profits of the company's products. We will analyze whether the promotion is effective.
    B. At every anomaly point, it's important to analyze our competitor's strategy, which helps Amazon's sales team adjust strategy in a timely manner.

2. Improve customer stickiness.

    For amazon, it is very important to increase customer repurchase rate. We will gain deeper insights about our customers and standardize customer dataset in python, then we can segment and group them by cohorts, e.g. frequency of purchase and activity. Amazon salespeople can offer different promotions and activities to different groups of customers based on our customer Tableau Dashboard, which will close the relationship with customers and increase sales.

In Order to achieve the mentioned goals of our assignment, we must modify and populate more data significantly.For example, adding more details of sales and customer. And hence we can work on adding fields like profits, sales in the products table and monetary value of a customer in the customer's table.

Any changes in the scope of our assignment will be intimated to the TAs and the professor.

amazon

Thank You.

A brand for a company is like a reputation for a person. You earn reputation by trying to do hard things well.

Jeff Bezos

www.thequotes.in

Team -03:
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