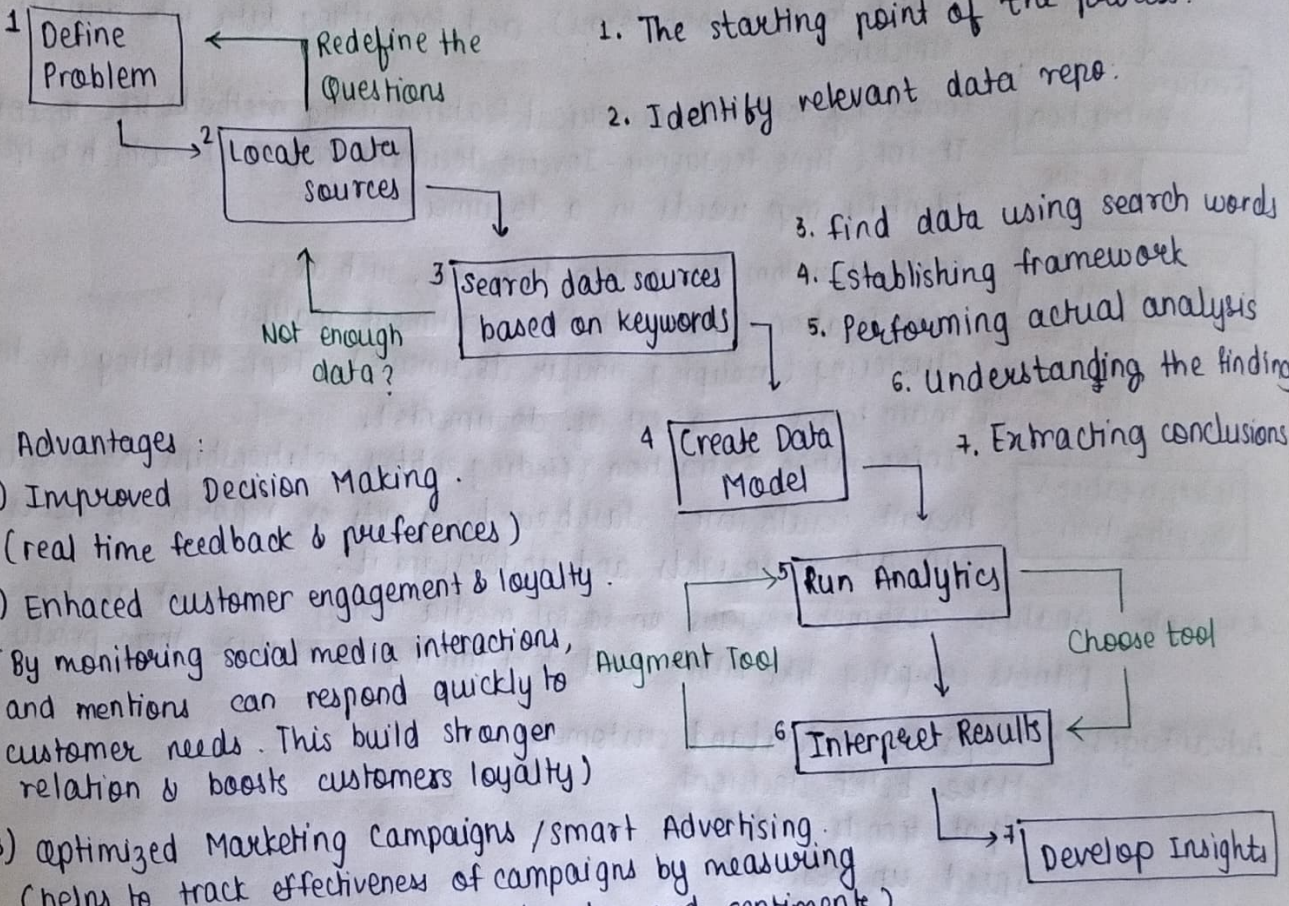
SOCIAL MEDIA ANALYTICS

- Process of collecting, analyzing, and interpreting data from social media platforms to extract actionable insights that support business decisions & improve the performance of social media strategies.
- It goes beyond simply tracking likes, shares or followers; it involves using specialized tools and technologies to mine unstructured data, identify patterns and understand audience behaviour across platforms (like fb, insta).
- Process of Social Media Analytics:



1. The starting point of the process.
2. Identify relevant data repo.
3. find data using search words
4. Establishing framework
5. Performing actual analysis
6. Understanding the finding
7. Extracting conclusions

- Advantages:

1) Improved Decision Making.
(real time feedback & preferences)

2) Enhaced customer engagement & loyalty.
(By monitoring social media interactions, and mentions can respond quickly to customer needs. This build stronger relation & boosts customers loyalty)

3) Optimized Marketing Campaigns / smart Advertising.
(helps to track effectiveness of campaigns by measuring reach, impressions, engagement rates and sentiments.)

4) Competative Advantage / Know Your Competitors
(can identify strengths, weakness and opportunities in compitator's market).

5) Show Results Clearly (how ads & posts helped in increasing sales).

Example: McDonald's

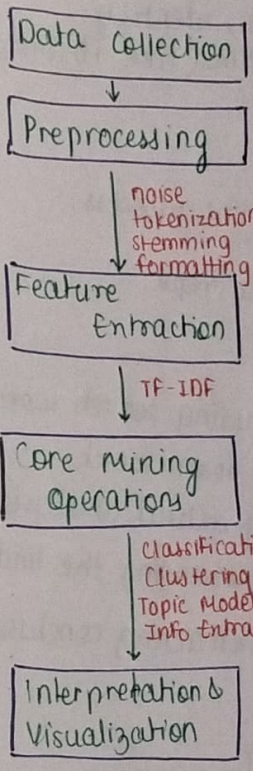
- McD used social media analysis to see what customers liked & how the reacted.
- They replied quickly to messages and shared content that ppl enjoyed.
- This helped increasing engagement by 30%. (of customers) and made people comeback to their restaurants.

Example 2: ~~Zoo~~ Zomato (Interactive messaging style)

TEXT MINING

- Process of extracting meaningful information and insights from large volumes of unstructured data (text data) using techniques from NLP and ML.
- It helps organizations turn textual data (like reviews, emails) into structured, actionable knowledge.

Architecture:



Gather text data from sources (websites, social media, emails).

Clean & Prepare the text by removing noise (stop words, punctuations), tokenizing (split text to words), stemming / lemmatization (reduce words to their root forms), and formatting data into standard structure.

Converting text into numerical features using methods like ~~TD-IDF~~ TF-IDF (Time frequency - Inverse document frequency), which helps identify imp words in a document.

Apply algorithm for pattern discovery, such as:
Classification (spam detection, sentiment analysis),
Clustering (grouping similar documents), Topic Modeling (finding main topics in a set of documents),
Information Extraction (finding entities, relationships, keywords)

Present results using dashboards, charts or reports so users can act on insights and understand it.

- Example: Analyze customer reviews on social media using sentiment analysis.
  Fitness company like Fitbit used text mining to analyze their product.

- Advantages:
  - Helps to understand customers
  - Make better decisions
  - Spot trends and risks
  - Speed up research
  - Filter spam
  - Advertising and Personalization

MOBILE ANALYTICS

- Process of collecting, measuring, and analyzing data about how users interact with mobile apps and mobile websites.
- It helps businesses understand user behaviour, app performance and engagement enablig them to make data-driven decisions to improve user experience and achieve busines goals.

- Advantages:
  - Improve user-Experience (understanding how users interact with app)
  - Data-driven decisions (Team can prioritise based on real user data)
  - Increased Retention and loyalty (identifying pain points to improve)
  - faster Bug fixes (real time crashes reports let team quickly address issues before they affect many users)

– Types :–

1) Advertising / Marketing Analytics –

Purpose : To measure and optimize the effectiveness of marketing campaigns and maximize return on investment (ROI).

[ie Optimize ad spending, Choose best platforms for ads, Improve ROI].

Key Metrics : i) CTR (Click Through Rate) = $\left(\frac{\text{No. of clicks}}{\text{No. of impressions}}\right) \times 100$ ↑ CTR = ad is attractive

ii) Conversion Rate = $\left(\frac{\text{No. of Conversions}}{\text{No. of Clicks}}\right) \times 100$ % of users who take desired actions (like installing an app or making purchase) after clicking an ad.

iii) Attribution = identify where users came from (Insta ad, Google search, YT link, etc)

iv) CLTV (Customer Lifetime Value) = Total value a customer brings during their time using the app.

Eg. A food delivery app runs ~~ads~~ ads on Insta & Facebook. Marketing analytics help them see : Insta brings more installs. So they shift budget accordingly.

2) In-App Analytics –

Purpose : Improve UX, Remove unnecessary features, Design better app flow.

Key Metrics : i) Screen views - tracks which screen / pages users visit most often (eg. Home, Cart, Profile), showing popular features or content.

ii) Clicks / Interactions - measures how often users tap buttons, links or features, helping identify what users like or ignore.

iii) Session length - How much users spends per visit.

iv) Feature usage - Which features are used most / least.

Eg. In a fitness app, users spend 70% of time on "Sleep Tracker" and hardly anyone uses "Community Tab" (so focus more on tracking features & redesign or remove unused ones)

3) Performance Analytics –

Purpose : Fix bugs fast, Keep app fast and stable, Prevent uninstalls due to poor performance.

Key Metrics : i) Crash Reports - why app crashes

ii) Load Time - Time taken for app / screen to load (Faster load = happy user)

iii) App Responsiveness - Smoothness in the app when user scrolls, tap and swipe

Eg. A game app sees spike in crashes after an update

– How Mobile Analytics is different from social media Analytics ?

Mobile Analytics : Tracks user behaviour inside mobile apps. Measures screen views, session time, crashes etc.. Helps improve app UX, performance and engagement. Used by app developers, UX designers.

Social Media Analytics : Tracks user interaction on social platforms. Measures likes,

CTR, comments, reach. Helps improve brand awareness and marketing strategy. Used by marketing teams, brand managers.

DATA ANALYTICS LIFECYCLE OF CASE STUDIES

i) Problem Definition - state business problem / question tobe answered.

ii) Data Collection & Access - collect relevant data from various sources.

iii) Data Cleaning & Preparation - remove errors, duplicates, and irrelevant data, also format and structure data for analysis.

iv) Exploratory Data Analysis (EDA) - use statistics and visualization to explore patterns, trends and anomalies in the data.

v) Advanced Analysis & Modeling - Applying ML & statistical methods, models to answer business question.

vi) Visualization & Communication - present findings

vii) Implementation & Monitoring - deploy the solution & monitor its impact on business goal.

Eg. ~~Zoo~~ Zomato, Amazon

i) Why do users abandon their carts before ordering?
ii) Gather user activity, search and ordering data from the app.
iii) Remove incomplete or suspicious activity.
iv) Find common drop-off points and popular cuisines.
v) Build model to recommend dishes & optimize the order funnel.
vi) Dashboard tracks conversion rates & user engagement.
vii) Launch new features, monitor order rates, and adjust as needed.

ORGANIZATIONAL IMPACT OF BIG DATA

1) Enabling smarter, faster decision making.
2) cost Reduction (eg cloud storage, automation)
3) Personalizing customer experience. (recommending products based on browsing history)
4) Driving innovation & growth. (develop new products, entering new markets)
5) Managing risk more effectively. (use analytics to identify risks, prevent frauds)
6) Enhancing employee management. (HR analytics help organizations recruit, retain)

UNDERSTANDING DECISION THEORY

- It focuses on choosing the best ~~th~~ outcome from alternatives using data, probabilities, and models.
- It combines beliefs (probabilities of outcomes) and desires (utilities or preferences) to determine the optimal course of action.
- Widely used in economics, management and data science, it helps individuals and organizations navigate complex decisions by evaluating risks, rewards and trade-offs.

CREATING BIG DATA STRATEGY

Set clear goals → Choose Projects (easy & imp) → Check current setup (tools) → Make Data rules (Who can use data, how to keep it safe, etc) → Plan Data System (where to keep data) → Pick Tools & Team → Start & Test → Watch & Improve

BIG DATA VALUE CREATION DRIVERS

- Big data creates value for organizations by enabling better decisions, new opportunities and improved efficiency.
- Big data value means turning massive amounts of raw data into useful insights that help a business grow, make better decisions and stay competitive.
- "Value" in Big data means usefulness or benefit that organization gets from the data, such as increased profits, improved efficiency, better customer experiences or smarter products.

MICHAEL PORTER'S VALUATION CREATION MODEL

- Also called as Value chain model is a powerful framework for analysing how a company creates value and achieves a competitive advantage.
- It breaks down a company's activities into primary and support activities, showing where value is added at each step & where improvements can be made to increase profit & efficiency.
- What is Porter's valuation creation model?
  It breaks company's work into smaller parts called activities
  These activities add value to the product/service.
  By improving these activities, a company can make more profit or offer better products
- Porter's Value chain Analysis
  It is a method to study all the activities in a company.
  The goal is to find where value is created and how to improve those parts.
  The activity is divided into 2 groups:
  i) Primary activities (directly involved in making & selling products)
  ii) Support activities (help the primary activities work better)

- Primary Activities (main steps that help create & deliver the product/service)

i) Inbound Logistics - Getting & storing raw material/input from suppliers.
Eg. e-commerce company stores products received from manufacturer, that it plans to sell.

ii) Operations - Turning raw material into finished products.
Eg. Assembling smartphones or making doughnuts.

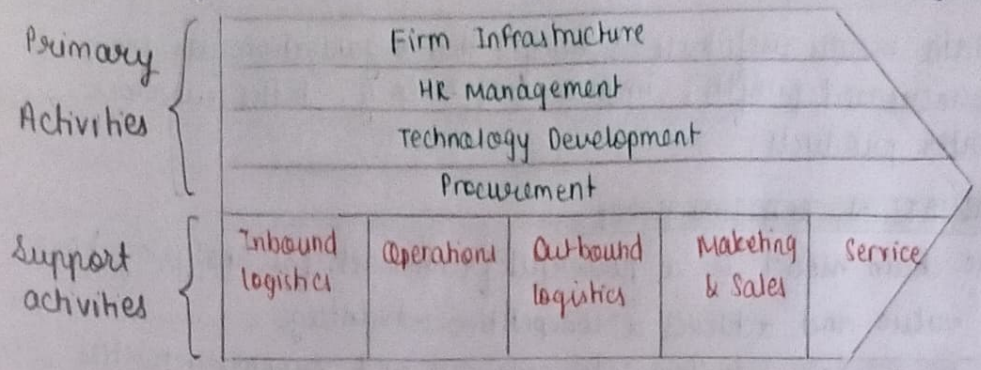
iii) Outbound Logistics - Delivering finished product to customers.
Eg. Shipping products to stores and buyers.

iv) Marketing & Sales - Promoting & selling the product to customers.
Eg. Advertising, discounts or sales calls.

v) Service - Supporting customers after they buy the product.
Eg. Repairs, customer support or warranties

- Support activities

i) Procurement - Buying materials or services needed.
ii) Technology Development - Improving products or processes.
iii) HR Management - Hiring & Training employees.
iv) Firm Infrastructure - Company management, finance, legal & planning.



BIG DATA USER RAMIFICATIONS means ways that using Big Data changes/affects how ppl interact with products, apps / services

Big Data impact on UX

Personalization, faster response, Improved quality, efficiency, Challenges

IDENTIFYING BIG DATA USE CASE

Steps:

i) Find Data-rich areas - areas that generates lots of data.
ii) Identify Business Challenges - pinpoint opportunities or problems.
iii) Check for Impact - make sure solving problem can bring measurable benefits
iv) Assess Data Availability - ensure having access to necessary data.

Use Cases:

i) Banking & finance - fraud detection.
ii) Retail & e-commerce - Personalized Recommendations.
iii) Healthcare - Patient Predictions.
iv) Education - Student Performance Tracking.
v) Marketing - Targeted Advertising.
vi) Logistics - Route Optimization (GPS).

BIG DATA ANALYTICAL CHALLENGES

- Data Security & Privacy.
- Data Integration from various sources is complex.
- Data Quality and Accuracy.
- Skill Shortage
- High Implementation Costs
- Real time Processing
- Scalability (handling Big data is hard)

- Following Rules & laws
- Nature of Big data

RESEARCH DIRECTION IN BIG DATA ANALYTICS

- Scalable ML & AI
- Real time Data Processing
- Better Data visualization
- New data storage ideas.
- Making data from different sources work together
- Automatic Data cleaning.
- Helping ppl understand AI results
- Improving Data Privacy & security