1.4 Big Data – Big Insights

ICE BREAKERS

➢ **Give business suggestions to the respective industry/company for the following situation. One is done for you.**

You have received data that -

(a) Many passengers prefer morning flights between 7 am and 9 am from Mumbai to Delhi.

Suggestion: Increase the number of flights between 7 am and 9 am.

(b) Many students are opting for UPSC/MPSC Exams.

Suggestion: .....

(c) Many people go for morning walk to Kamla Nehru Park.

Suggestion: .....

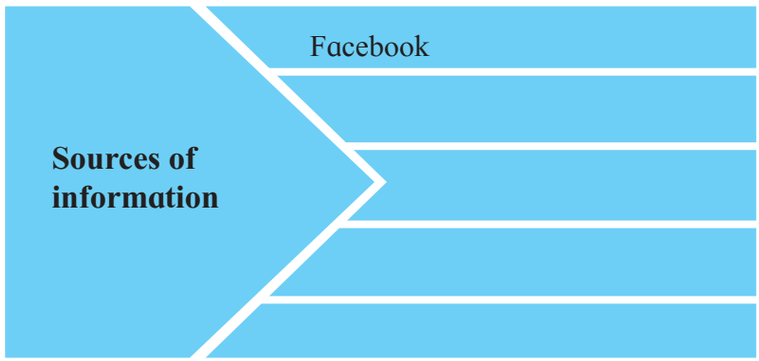
(d) Many people buy clothes from miracle.com an online shopping site.

Suggestion: .....

(e) The viewership on television is more between 8 pm and 10 pm.

Suggestion: .....

➢ **People get information from various sources: Can you name a few?**



Big Data – Big Insights

What is Big Data?

There is a revolution in the life style of people which has been affected by Big Data. Our food habits, our health care, our travelling, our scientific pursuits, you name it and everything has changed 360 degrees. The massive data available with us can really work wonders. Friends, do you know what happens when we like a post on Facebook or share a post on WhatsApp, visit any website, make online purchases, or watch videos? Yes, whatever activity we do online is recorded, monitored and analysed. So a huge amount of data is collected. Let me give you an idea of how huge the data might be. Big Data can be **petabytes** or **exabytes** of data consisting of billions to trillions of records of millions of people- all from different sources, for example web, sales, customer contact centre, social media, mobile data and so on. The data available to industries and companies is enormously increasing in volume, variation, velocity, veracity and value. Such a Big Data is easy to obtain but so massive that it challenges the current computing technologies and hence Big Data analytics is used to give insights that were previously incomprehensible. Big Data analytics is the complex process of examining large and varied data sets or Big Data to uncover information- such as hidden patterns, unknown correlations, market trends and customer preferences. With such a huge data available with the industries they can have innumerable advantages hence all the industries are trying to reap the maximum benefit from it. Many industries have advanced by miles from their competitors. It's not the amount of data that is important but what the organizations do with the data is what matters.

petabytes : units of information equal to one thousand million

exabytes : units of information equal to one quintillion

Discuss how Big Data is increasing in volume, variation, velocity, veracity and value.

Uses of Big Data

1. Location Tracking : Big Data has been useful in identifying and tracking the exact location of a place. Your GPS and Google Maps make use of Big Data. With geographic positioning and radio frequency identification sensors we get the real-time data about traffic, congestion on a particular route, information if the route is closed or if it is a one-way route, understanding accident prone areas

• How can you check the condition of the goods?

• How can you reduce risk in transport?

etc. You can plan your own route according to the travel time and the transportation of goods. If you have ordered something online you can track the location of your goods in transit, you can also track the condition of the goods. This has immensely helped the logistics companies to reduce risks in transport, improve speed and reliability in delivery.

2. Understanding the Weather Patterns : There are weather sensors and satellites set-up all around the globe. Huge amount of data is continuously being received from them. They help us to understand the weather and help in weather forecasting. Weather patterns give us warnings of the **impending** natural **calamities** like floods, earthquakes, tsunami etc. Necessary preparations to combat them can be made well in advance. We can study global warming, predict availability of natural resources like water.

3. Health Care Industry : Today, we see that people have become health conscious. The smart watches, other wearable, health apps in our phone keep on collecting data. We can say that they are our own mini biomedical research devices. They detect our heart rate, monitor the patient's sleep pattern, keep a record of his exercise, the distance walked etc. The analysis of this data collected can give new insights and provide a personalized, individual feedback to each and every person. Nowadays we have gadgets to monitor blood sugar, blood pressure etc. at home; 24 x 7 monitoring can be provided to patients in hospitals too. With the help of Big Data the doctors can now have better diagnosis of any ailment, the effect of any drug etc. Unnecessary guesswork can be significantly reduced. Past records of the patients can be maintained and better analysis of the health can be obtained. Big Data helps in monitoring the outbreaks of epidemics and diseases. Just when you post your message, 'I'm down with flu' on WhatsApp or Facebook it will be monitored and the areas affected by 'flu' can be easily located and necessary precautions can be taken. Pharmaceutical companies would pay huge amount to receive the health data of people to promote research in the particular area. With the help of the data gathered, individuals are often given suggestions and solutions for the problems they are encountering.

impending : about to happen
calamities : great and often sudden damages or distresses

Do you think Big Data has improved the quality of life? How?

4. Banking, Finance and Trading : With the Big Data analytics, the investment patterns of the people can be studied. New insights have enabled the banks and finance companies to come with suitable plans. Big Data has enabled smooth functioning of these agencies and institutions.

Banking and finance sector is using Big Data to predict and prevent cyber crimes, card fraud detection, archival of audit trails, etc. By analyzing the past data of their customers and the data on previous **brute force attacks** banks can predict future attempts. Big Data not only helps in predicting cyber crimes, but it also helps in handling issues related to **mised-transactions** and failures in net banking. It can even predict possible spikes on servers so that banks can manage **transactions** accordingly.

brute force attacks : a cyber attack that relies on guessing all possible combinations of a targeted password untill the right one is found
mised-transactions: wrong transactions
transaction : an exchange or transfer of funds

The Securities Exchange Commission (SEC) is using Big Data to monitor financial markets for possible illegal trades and suspicious activities. The SEC is using network analytics and natural language processors to identify possible frauds in the financial markets.

Can we understand the economy of the country by the data on Banking and Finance?

High-Frequency Trading (HFT) is an area where Big Data finds a lot of use today. Here, Big Data **algorithms** are used to make trading decisions. Today, the majority of equity trading now takes place via data algorithms that increasingly take into account signals from social media networks and news websites to make, buy and sell decisions in split seconds.

algorithm : a process of set of rules to be followed in calculations especially by a computer

5. Sports : When watching a cricket match, we are shown so many permutations and combinations of statistical analysis. A gigantic data has been created over a period of time from the recording of matches, training sessions and workouts. The data enables a sportsperson to study his performance as well as of the other players worldwide. It has tremendously helped in improving individual as well as team performance. The sensors embedded in the sports equipment help us to understand our game from close quarters. The sensors help us to understand the field conditions, the weather, individual performance etc. Video analytics help us to see each and every performance minutely.

6. Advertising : Advertisers are one of the biggest players in Big Data. Be it Facebook, Google, Twitter or any other online giant, all keep a track of the user behaviour and transactions. These internet giants provide a great deal of data about people to the advertisers so that they can run targeted campaigns. Take Facebook, for example, here you can target people based on buying intent, website visits, interests, job roles, **demographics** and what not. All this data is collected by Facebook algorithms using Big Data analysis techniques. The same goes for Google, when you target people based on clicks you will get different results and when you create a campaign for leads then you will get different results. All this is made possible using Big Data.

demographics: statistical data relating to the given population and particular groups within it

Do you think people click consciously on Facebook ? Discuss.

7. Entertainment and Media : In the field of entertainment and media, Big Data focuses on targeting people with the right content at the right time. Based on your past views and your behaviour online you will be shown different recommendations. This technique is popularly used by Netflix and Youtube to increase engagement and drive more revenues.

Now, even television broadcasters are looking to segment their viewer's database and show different advertisements and shows accordingly. This will allow better revenue from ads and will provide a more engaging user experience.

8. Education Industry : Big Data has inundated the education industry. It has transformed it in leaps and bounds. Now we have information about the students, their study patterns, and we can now prepare customized and dynamic learning programmes according to the need of an individual student. Every student's comprehension level is different. The course material can now be designed catering to different requirements of the students. Big Data makes it convenient to understand their choices, their difficulties, information regarding various courses and their specialties; we also have an access to the results. From the results we can gauge the progress of the students, understand his strengths and weaknesses. This will also help in guiding the student regarding the best career for him based on his mental make-up and abilities. An in-

Do you think Big Data will help to bring improvement in students?

Discuss a solution provided by Big Data.

depth study of all this would definitely give new insights into the education industry and help in improving the operational effectiveness and working of educational institutes. This would in general, enhance progress of all students. Big Data has provided a solution to one of the biggest pitfalls in the education industry, that is one – size- fits- all.

We have innumerable uses of Big Data. It is helpful in scientific researches, understanding geographical phenomena, helping in the smooth working of the government machinery etc. It is a genie in our hands. It lies in our hands to make the optimum use of it for the benefit of mankind.

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BRAINSTORMING

(A1) Youtube has many videos on various things. Listen to the uses and health benefits of 'Lemon' and share them with your friends.

(A2) (i) Make pointwise notes from the lesson regarding the uses of Big Data in the following application. Do not write complete sentences.

(a) Location Tracking -

(1) .....

(2) .....

(3) .....

(4) .....

(b) Health Care Industry -

(1) .....

(2) .....

(3) .....

(4) .....

(c) Education Industry -

(1) .....

(2) .....

(3) .....

(4) .....

(ii) When you are asked for personal details on social media, what precautions will you take? Discuss in pairs and write down.

(iii) Do you think all the data we receive is used for positive things? If 'No', make a list of the negative things which can be done with the help of Big Data.

(A3) Guess the meaning of the following idioms and phrases and use them in sentences of your own. One is done for you.

One-size-fits-all – suitable for or used in all circumstances

The wrist watches have adjustable belts, so one- size- fits- all

(a) 'Once in a blue moon'

(b) 'One man army'

(c) 'Once bitten twice shy'

(d) 'One up on'

(A4) (i) Do as directed.

(a) Advertisers are one of the biggest players in Big Data.

(1) Begin the sentence with 'Very few …….'

(2) Use 'bigger than' and rewrite the sentence.

(b) No other diagnosis is as good as the diagnosis done with the help of Big Data.

(1) Use 'best' and rewrite the sentence.

(2) Use 'better than' and rewrite the sentence.

(c) These internet giants provide the greatest data about people.

(1) Begin the sentence with 'No other……..'

(2) Use 'greater than' and rewrite the sentence.

(ii) Read the sentence from the text.

New insights have enabled the banks and finance companies to come up with suitable plans.

This sentence can be rewritten as 'New insights have enabled the banks as well as finance companies to come up with suitable plans'.

Remember, 'as well as' serves the same purpose as that of co-ordinating the conjunction 'and' in the sentence. When one of them is inserted in the sentence, other should be removed.

Use 'as well as', 'either ..... or' in the following sentences.

(a) Whatever activity we do online is recorded, monitored and analysed.

(b) Big Data has been useful in identifying and tracking the exact location of a place.

(c) Weather sensors and satellites help us to understand the weather and help in weather forecasting.

(d) Big Data helps in monitoring the outbreaks of epidemics and diseases.

(e) New insights have enabled the banks and finance companies to come up with suitable plans.

(A5) (i) Interview the students of your class regarding the career they would like to pursue and the reason for selecting that particular career. Collect the data of your class and analyse the information you have collected.

(ii) To listen well is as powerful a means of influence as to talk well and is essential to all true conversations. Form a group and have a group discussion on the topic.

(a) Social Media – Curse or Boon

(b) Women Empowerment and Equality

(c) Climate Change

(A6) Find out job opportunities in the following areas and the skills required for them.

(a) Clinical Data Management

(b) Network Operations

(c) Data Processing

(d) Data Operations and Research

(e) Data Entry Operation

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