# Analytical Decision Making

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# Introduction of Analytical Decision Making

- **Analytical decision making** is a process of carefully analyzing a data and come up with a solution.
- It is the actual **selection** from among alternatives of a course of action.
- It is at the core of **planning**.
- It is not a easy job, it require **analytical skills**.
- It is affected by **number of factors**.
- A good decision is taken by adopting a **procedure**.

- This process is depending on **nature of the problem** and **the nature of the organization**.

# Analytical Decision Maker

- Analytical decision makers carefully analyze a data and come up with a solution.
- They are careful and adaptable thinkers.
- They will invest time to glean information to form a conclusion.
- These decision-makers are task-oriented.
- Analytical decision-makers take time to compile data and evidence before they come to a conclusion.
- When they do make a decision, they have looked at all the details and formed what they believe is the best possible solution.

# Analytical Decision Making Process

1. Identification of a problem
2. Diagnosing the problem
3. Collect and analyze the relevant information
4. Discovery of alternative course of action
5. Analyzing the alternatives
6. Selection of best alternative
7. Conversion of decision into action
8. Verifying the decision

# 1. Identification of a problem

- **Recognizing** a problem
- Problem arises due to difference between **what is** and **what should be**.
- Changes in the business environment are the main reason for creating a problem.
- A well defined problem is half solved.
- Example : If staff working with unavailability of internet. So internet is the problem.

# 2. Diagnosing the problem

- There is a difference between identifying the problem and diagnosing the problem.
- Example : A doctor can diagnosed the patient illness. The patient can not find what the real disease is. But doctor can do so with the help of information given by the patient.
- In management, the manager acts as a doctor when diagnosing the problem.

# 3. Collect and analyze the relevant information

- Analytical Decision maker should collect the information and **study** it carefully to analyze the problem.
- If problem is analyzed, a **quick and quality** decision made by the decision maker.
- He must verify that only **relevant** information is collected and analyzed.
- Example: If you want a marketing consultancy and you are considering a pay per click advertising campaign, you may want to have information such as which keywords customer use most when searching for results related to consulting.

# 4. Discovery of alternative course of action

- **Creative thinking** is necessary to develop or discover many alternative courses of action.
- If there is **no** alternative, there is no need to make a decision.
- If there are **many** alternative, the decision maker will have more freedom to make decisions.
- Example : A Person believe that he must have a car to go to work. However, he should consider other alternatives, such as public transportation, renting a car, shared car ownership or a company car.

# 5. Analyzing the alternatives

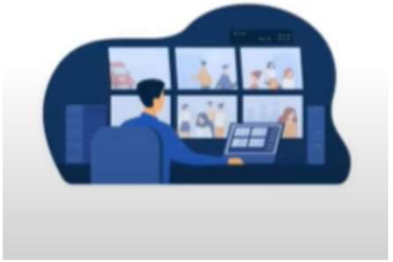
- The generation of alternatives must be followed by a **thorough analysis** of the pros and cons of each alternative.
- The alternatives must be **evaluated** to see how **effective** each would be.
- The decision maker can prepare a **list of limits** for each alternative.
- Example : Consider two alternatives that are equally risky, but one will cost more and the other will take longer to implement. In this case, the decision would depend on whether **cost or time** is more important.

# 6. Selection of best alternative

- After careful evaluation the decision maker can select the **best alternative**.
- An alternative that gives **maximum benefits** to the organization is selected and also it must be suit organization **objectives**.
- Example : Problem is which car to buy? What is important to us that will help us to determine which car best suit our situation. Customer has to consider all parameters like style, comfort, noise, fuel consumption, speed, price, available payment terms, reliability etc.

# 7. Conversion of decision into action

- Based on all thinking, analysis and evaluation, now is the time to **implement** the decision.
- Whether the decision you have made is correct or not, it will only be determined if you implement it.
- The implementation of the decision requires **constant monitoring** so that the expected result of the optimal course of action are obtained.
- Example : The upgrade of infrastructure of an organization must be planned in a series of stages that in total span a period of months or years.



# 8. Verifying the decision

- Decision maker should monitor the **decision implementation process** to make sure everything is processing according to plan.
- He must also ensure that the problem that started the decision making process has been **resolved**.
- Example : We need to check that after starting Covid-19 vaccination program, are we able to solve corona pandemic problem or not.

# Characteristics of the Analytical Decision Making Process

- **Selective**: It is a selective process in which the **optimal alternative** is opted, among the various alternatives. The selection of the alternative is done, only after evaluating all the alternatives against the objectives.
- **Mental and intellectual process:** : It is a mental and intellectual process because whatever decisions are taken, they are based on **logical study** to make them more effective. For which intelligence, knowledge, experience, educational level, and mental facilities are essential.
- **Dynamic:** It is a dynamic activity in the sense that a particular problem may have **different solutions**, depending upon the time and circumstances.
- **Positive or Negative**: A decision is not always positive, sometimes even after analyzing all the points a decision may turn out as a negative one.
- **Goal oriented:** Decisions should be **goal oriented** for the organization.

# Characteristics of the Analytical Decision Making Process

- **Ongoing process**: We all know that in a company various decisions are taken daily by different levels of management to keep the firm going. These decisions are taken by keeping in mind the objectives of the organization.
- **Evaluative**: Evaluation of the possible alternatives using critical appraisal methods, is a part of the decision-making process.
- **Choice of alternative**: Decision maker has freedom to choose an alternative.
- **Measurement of Performance:** Decision making is a measurement on the basis of which the success or failure and execution or non-execution of the decisions taken by the managers.

# Breaking down a business problem into key questions

1. What business problem do we want to solve? (in a precise, well defined way)
2. What exactly will be the commercial benefit of solving the problem?
3. What data is available that might help to solve the problem?
4. How exactly can we use data to solve the problem?
5. How much pre-processing will be required?
6. What techniques and technologies will be used?
7. What timelines, resources and budgets are required?
8. Do the plans fit in with the rest of the business?
9. Are they aligned with your overall data science strategy?

# Characteristics of good questions

- Relevant
- Clear
- Concise
- Purposeful
- Guiding to get alternatives
- Stimulates Thinking / Encouragement for thinking
- Single-Dimensional
- Define aim / objectives
- Brief and direct

# Business analyst

- Business analysts are responsible for using data to inform **strategic business decisions**.
- Business analysts tend to be more involved in addressing business **needs and recommending** solutions.
- Duty of Business Analyst is **evaluating** business processes for efficiency, cost, and other valuable metrics.
- Presenting **strategic recommendations** for process adjustments, procedures, and performance improvements.
- Creating visuals and financial **models** to support business decisions.

# Skills of a good business analyst

- Understanding the Business Objective
- Analytical and Critical Thinking
- Communication and Interpersonal Skills
- Negotiation and Cost-Benefit Analysis
- Decision-Making Skills
- Knowledge Programming Languages
- Creation of Reports and Dashboards
- Knowledge of Database and SQL
- Knowledge of statistics and probability
- Problem Solving technique
- Documentation

# Business analytics applications

1. Marketing Analytics
2. HR Analytics
3. Supply Chain Analytics
4. Finance Analytics
5. Retail Industry Analytics
6. Sales Analytics
7. Web & Social Media Analytics
8. Healthcare Industry
9. Energy Analytics
10. Transportation Analytics
11. Lending Analytics
12. Sports Analytics

# Marketing Analytics

- **Marketing** is a process of identifying and satisfying human needs and wants profitably.
- It is the practice of measuring, managing and analyzing of market performance to maximize its effectiveness.
- It is the study of data collected through marketing campaigns like pay per click, email marketing, social media etc.
- Improve lead generation by providing insights needed to optimize advertising efforts.
- It provides insights into customer behavior and preferences.
- It enables real time decision support as well as proactive management.

# HR Analytics

- **HR analytics** is the process by which statistical tools, methods and technologies are used to analyze historical HR data in order to gain new insight and improve strategic decision making.
- HR professionals can make use of data to find information about educational background of high performing candidates, employee attrition rate, number of years of service of employees, age, gender, etc.
- This information can play a pivotal role in the selection procedure of a candidate.
- HR manager can predict the employee retention rate on the basis of data given by Business Analytics.

# Supply chain Analytics

- **Supply chain** is the management of the flow of goods and services and includes all processes that transform raw materials into final products.
- Supply chain starts from vendor then manufacturer and distributor till consumer uses those product.
- Business Analytics can help in **supply chain management**, **inventory management**, measure performance of targets, improve efficiency on the basis of product data, etc.
- Example : The Manager wants information on performance of a machinery which has been used past years. The historical data will help evaluate the performance of the machinery and decide whether costs of maintaining the machine will exceed the cost of buying a new machinery.

# Finance Analytics

- **Financial analytics** is the creation of ad hoc analysis to answer specific business questions and forecast possible future financial scenarios.
- The goal of financial analytics is to **shape the strategy** for business through reliable, factual insight.
- Financial analytics can help companies determine **the risks** they face, how to enhance and extend the business processes that make them run more effectively, and whether organizations' investments are focused on the right areas.
- For example: Companies these days have a large amount of financial data. Use of intelligent Business Analytics tools can help use this data to **determine the products' prices**. Also, on the basis of historical information Business Analysts can study the trends on the performance of a particular stock and advise the client on whether to retain it or sell it.

# Retail Industry Analytics

- **Retail analytics** is the process of providing analytical data on inventory levels, supply chain movement, consumer demand, sales, etc. that are crucial for making marketing, and procurement decisions.
- The analytics on **demand and supply data** can be used for maintaining procurement level and also for taking marketing decisions.
- Retail analytics gives us detailed customer insights along with insights into the business and processes of the organization with scope and need for improvement.
- All of which can be used for a variety of applications like maintaining procurement levels and making crucial marketing decisions.

# Sales Analytics

- Sales analytics is analysis of data to track **how your sales process** and representatives are performing.
- Sales analytics refers to the technology and processes used to gather sales data and get the information of sales performance.
- Sales leaders use these metrics to set **goals**, improve **internal processes**, and **forecast future sales** and **revenue** more accurately.
- It should help you clearly understand your team's performance, sales trends, and opportunities.

# Web & Social Media Analytics

- Web analytics uses the data collected directly from a particular business website.
- Web Analytics mainly used to **improve the user experience** and **conversion rate**.
- Social media analytics gathers information from social media networking sites and helps businesses better understand **customer view**, users' **attitudes**, build **rich consumer profiles** and build **effective business strategies**.

# Healthcare Industry Analytics

- Healthcare analytics is the process of analyzing current and historical industry data to **predict trends, improve outreach**, and even better manage the **spread of diseases**.
- Healthcare analytics is essential to inform decisions, improve quality and performance of the healthcare organization.
- Healthcare organizations must be able to manage, analyze, and interpret data in order to identify the best ways **to deliver high quality care**.
- It can reveal paths to improvement in patient care quality, clinical data, diagnosis, and business management.

# Energy Analytics

- Energy analytics generally describes the process of **collecting electrical data** and applying sophisticated analytical software and algorithms to deliver insights around consumption and time of use reductions.
- Example : Right now we receive monthly or quarterly energy bills that tell us how much we are spending on energy. But these bills don't provide insight into where we are inefficient with the energy use and where we could **save money**.
- Energy analytics gives valuable insights into energy data, improved **energy efficiency** and **reduced energy cost**, it can streamline job as an energy manager, it simplifies data sharing and collaboration.

# Transportation Analytics

- Big data analytics help the public transportation sector to predict **passenger volumes** as precisely as possible.
- Transportation data analytics offer an up-to-date and easy-to-use data source for improving, calibrating, and validating models.
- Example, certain events such as bad weather, holidays, malfunctions and customer feedback from running transportation operations can be analyzed and processed in real time.

# Lending Analytics

- Through Lending analytics, you can reach out to the **right customers** and **improve customer acquisition**.
- It also assists in efficient delinquency management and comprehensive loan servicing.
- By increasing the loan life-cycle value the lenders can retain their most profitable customers.
- It checks the **eligibility** of the potential borrower against the criteria set forth for lending.
- Loan analysis helps in assessing the **skills and financial knowledge** of the borrower to determine the level of risk involved.

# Sports Analytics

- Sports analytics is the analysis of **sports data**, including components of sports such as player performance, business operations, and recruitment.
- The roles of a sports data analyst involve collecting and analyzing sports data, then updating individual players, coaches, or team managers who use this data to make informed decisions during or before **sports competitions**.
- It's divided into on-field and off-field analytics.
- On-field analytics enhance the **performance of players** and coaching staff by focusing on their strategies and fitness.
- Off-field analytics use statistics to assist the owners of the sport entities to arrive at decisions leading to increased **growth and profitability** of their business.

# Future of a business analytics.....

- Data is generated from all verticals of a business, such as marketing, sales, finance, social media, etc., it becomes essential to analyze and understand the data to **make better business decisions** and **market development**.
- The scope in the area of business analytics is ever **growing** and **improving** to achieve the **goals** of business.
- Exploring business analytics requires the **proper focus, best technology, right people, clean culture and best management promise**.
- Companies like IBM, Cognizant, and KPMG are practicing business analytics tools and coming up with decisions that are **valuable and effective**.
- One needs to obtain an **appropriate skill-set** to succeed in a business analytics profession.

# Future of a business analytics

- Investigation, interpretation skills, a thorough knowledge of tools and techniques, ability to do in-depth analysis and quantitative skills are essential to **shine in the subject**.
- Besides the regular colleges, there are many analytics coaching institutes that are giving their own **business analytics courses** or are in collaboration with famous institutes.
- Business Analytics (BA) describes the skills, technologies, practices for constant pragmatic investigation and analysis of previous business performance to **gain insight and drive industry preparation.**
- Company analytics focuses on developing new insights and comprehension of firm operation **predicated on data and statistical methods**.

# Thank you