NABARD

DECISION MAKING
TOPIC – QUALIFYING SECTION

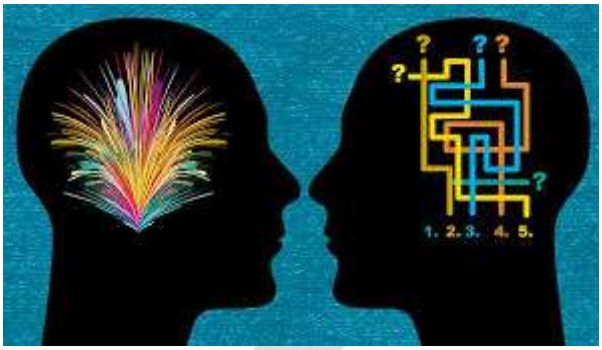
MASTER NOTES SUPPLEMENTARY

Web: www.c4scourses.co.in

Telegram: @Clarity4sure

Click You Tube

Contents



READING NOTES IS OF NO USE UNLESS YOU UNDERSTAND THE CONCEPT OF DM AS DISCUSSED OVER TWO MASTER SESSIONS
So first go through both session then read notes

1 How to proceed with the topic as per Model Q given by NABARD

DECISION MAKING

Q.1. Which of the following 'Environmental Factors' can affect the process of decision making?
(1) Organisation politics (2) Managerial perception (3) Government legislation
(4) Policies and procedures (5) Organisational hierarchy

Q.2. There are several Individual level factors that influence decision making, one such factor is that people often tend to continue to make risky decisions when they feel responsible for the sunk costs, time, money, and effort spent on a project This factor is known as
(1) Cognitive biases (2) Individual differences (3) Less excess to resources
(4) Escalation of commitment (5) Belief in personal relevance

Mainly DM questions are decision taking questions, based on situation that will be easy if they ask such. If static questions are asked in exam as given in model you have to read certain concepts of DM which are covered in master notes. Since this topic is new exact things what needs to be covered will be clear after exam only. Since it is of qualifying nature only 1-2 reading will definitely help in solving some question to clear the cutoff needed.

2 PYQ Memory based Q of both Shifts

Q1. Satisficing means
a. Complete Satisfaction
b. Incomplete Satisfaction
c. Minimal Satisfaction
d. All
e. None

Q2. Which of the following method of DM is generally used for for FORECASTING?
a. Brainstorming
b. Decision Tree
c. Nominal Group Technique
d. Delphi Technique
e. None

Q3. Preference for an alternative offering a low probability of food over an alternative offering a higher probability of food is a
a. Maximising Choice
b. Optimising Choice
c. Suboptimal Choice
d. Minimising Choice
e. None

Q4. These are medium-term decisions about how to implement strategy is referred as
a. Strategic Decision

b. Tactical Decision
c. Operational Decision
d. Routine Decision
e. None

Q5. Consider the consumer making a purchase decision in a particular product category for the very first time. In this situation it would be possible for the consumer to make the purchase decision using which of the following DM Process?

a. Programmed DM
b. Non Programmed DM
c. Routine DM
d. Policy DM
e. None

Q6. The process whereby a manager shares his work and authority with his subordinate is called as

a. Decentralization
b. Work flow
c. Delegation
d. Hierarchical flow
e. None

Q7. Which of the following scenarios best illustrates the concept of the backward Heuristic?

a. When you lose your keys, you begin to scour your dorm room because you know that you will eventually find them that way
b. When creating presentation for class you judge how close you are to finishing by looking at the quality of your presentation so far
c. In order to efficiently solve a crossword puzzle you meticulously inspect each of the across question and each of the down question
d. To organize documents in your computer you create an all document folder and proceed to subdivide into increasingly specific folders
e. None

Q8. …… illustrates that 80% of effects arise from 20% of the causes or 20% of your actions/activities will account for 80% of your results/outcomes.

a. Pareto Analysis
b. Heuristics
c. Conjoint Analysis
d. C:B Analysis
e. None

Q9. Decision making is one of the basic……. Processes of human behavior by which a preferred option or a course of action is chosen from among a set of alternatives based on certain criteria

a. Cognitive
b. Tactical
c. Operational
d. Strategic

e. None

Q10. It is systematic process that businesses use to analyse which decision to make & which to forgo. It sums the potential rewards expected from a situation or action and then subtracts the total costs associated with taking that action

a. Conjoint analysis
b. C:BAnalysis
c. Heuristic Method
d. Paired comparison analysis
e. None

Q11.A manager is considering purchasing new computers for his department. The manager spends time assessing the computers. Which stage of DM process is he going through?

a. Identification of problem
b. Identification of decision criteria
c. Development of alternatives
d. Implementation of alternatives
e. None

Q12. The rationality model is best defined by

a. All possible information about the problem is known
b. Decision is made only with future outcomes in mind
c. It is an ideal approach to DM
d. Decision Makers strive to make the most rational decision but understand there are boundaries
e. None

Q13. What you call a style of leadership that does not account of others views options and ideas during DM?

a. Laissez faire
b. People Oriented
c. Democratic
d. Autocratic
e. None

Q14. The DM step which consists of organization goals, predicting alternatives and communicating goals is called as?

a. Organizing
b. Planning
c. Alternatives
d. Staffing
e. None

Q15. Which of the following is a quantitative method of decision making?

Q16. Tendency to see a particular situation or issue from chosen perspective, influencing our ability to understand alternative or conflicting points of view or alternatives is called?

Q17. Which of the following problem solving tools is a visual means of displaying the

sequence of activities and decisions that occur in a system or process over time?

Q18. One of the barriers to good decision making is setting out to solve wrong problem because we have created a mental framework for our decision, with little thought, that causes us to overlook the best option or lose sight of important objectives. This is called?

Q19. Type of Data Analytics which is used to make forecasts about future trends and answer the question 'What might happen in the future'?

Q20. Most 'judgemental problems' are solved by?

Q21. In Root Cause Analysis (RCA), which of the following is the cause in case people did something wrong or did not do something that was needed?

Q22. Effective communication during decision making process will help to minimize?

Q23. Overconfidence about our judgement abilities and prediction accuracy, as we remember our successes and quickly forget our errors is called?

Q24. Which of the following decision making style is suitable for a leader where there are more than one right answer and where cause effect relationship is discoverable but not immediately apparent?

3 Introduction

- Decision making can be viewed as an integral part of planning in that key decisions have to be taken throughout the **planning process**.
- Decision is a choice whereby a **person comes to a conclusion about given circumstances/ situation**. It represents a course of behaviour or action about what one is expected to do or not to do. Decision- making may, therefore, be defined as a selection of one course of action from two or more alternative courses of action. Thus, it involves a choice-making activity and the choice determines our action or inaction.
- A decision represents a course of behaviour chosen from a **number of possible alternatives.** Following aspects of human behaviour are involved in decision-making:

❖ **Cognition**, the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses

❖ **Cognitive Bias -** A cognitive bias is a systematic pattern of deviation from norm or rationality in judgment. Individuals create their own "subjective reality" from their perception of the input.

❖ **Contain**, the action of the mind implied by such word as 'willing', 'desire', and 'aversion'

❖ **Affection**, the aspects of the mind identified with emotion, feeling, mood and temperaments.

- Decision making can be defined as 'the selection of a course of action from among alternatives'.
- The first comprehensive analysis of decision making process was given by **Chester Barnard** – "*The process of decision are largely techniques for narrowing choices*"
- Seckler Hudson "Decision making in the government is a plural activity….."
- **Herbert Simon** defined DM as "Optimal rational choice between alternative course of action"
- ***Gresham's Law of Planning*** *states that a person with responsibility for both routine activities and long-term planning is likely to find the routine activities taking the greater part of his time.*

Decision-making is the selection based on some criteria from two or more possible alternatives. "-—George R.Terry
A decision can be defined as a course of action consciously chosen from available alternatives for the purpose of desired result —J.L. Massie
A decision is an act of choice, wherein an executive forms a conclusion about what must be done in a given situation. A decision represents a course of behaviour chosen from a number of possible alternatives. -—D.E. Mc. Farland

4 Elements of DM

Rational Thinking	
Process	
Selective	
Purposive	
Positive	
Commitment	
Evaluation	

5 Characteristics of Decision

- Making decisions in an organisational context requires good judgement and diagnostic skills.
- Most managers advance within an organisation as a result of their ability to make good decisions.
- The characteristics of decisions faced by most managers are varied in nature, depending on the type of decision in question. Given that managers make a variety of decisions during their daily lives we would expect that decisions would have different characteristics.
- While decisions vary in nature it is possible to identify some key characteristics that define managerial decision making in the modern organization.
- Some decisions that managers make are routine and well structured and are thus relatively easy to make.
- However, other decisions are poorly structured and lack full information, making them much more challenging for the manager.
- We can distinguish between programmed and non- programmed decisions

5.1 Types of decision making

- **Programmed Decisions** These are standard decisions which always follow the same routine. As such, they can be written down into a series of fixed steps which anyone can follow. They could even be written as computer program. Programmed decisions relate to those functions that are repetitive in nature. These decisions are dealt with by following a specific standard procedure. These decisions are usually taken by lower management. For example, granting leave to employees, purchasing spare parts etc are programmed decisions where a specific procedure is followed.
- **Non-Programmed Decisions.** These are non-standard and non-routine. Each decision is not quite the same as any previous decision. Non-programmed decisions arise out of unstructured problems, i.e. these are not routine or daily occurrences. So there is no standard procedure or process to deal with such issues. Usually, these decisions

are important to the organization. Such decisions are left to upper management. For example, opening a new branch office will be a non-programmed decision

- **Strategic Decisions** These affect the **long-term direction** of the business eg. whether to take over Company A or Company B. These are usually taken by upper and middle-level management. They usually relate to the policies of the firm or the strategic plan for the future.
- **Tactical Decisions**. These are **medium-term decisions** about how to implement strategy eg. what kind of marketing to have, or how many extra staff to recruit.
- **Policy decisions.** Such decisions are usually reserved for the firm's top management officials. They have a long term impact on the firm and require a great deal of analysis.
- **Operational Decisions.** These are **short-term decisions** (also called **administrative decisions** about how to implement the tactics eg which firm to use to make deliveries. Operating decisions are the decisions necessary to put the policy decisions into action. These decisions help implement the plans and policies taken by the high-level managers.
- **Routine Decisions** As the name suggests, routine decisions are those that the manager makes in the daily functioning of the organization, i.e. they are routine. Such decisions do not require a lot of evaluation, analysis or in-depth study. In fact, high level managers usually delegate these decisions to their subordinates.

5.2 Structured vs Unstructured Decision

Unstructured decisions are those in which the decision maker must provide judgment, evaluation, and insights into the problem definition. Structured decisions, by contrast, are repetitive and routine, and decision makers can follow a definite procedure for handling them to be efficient.

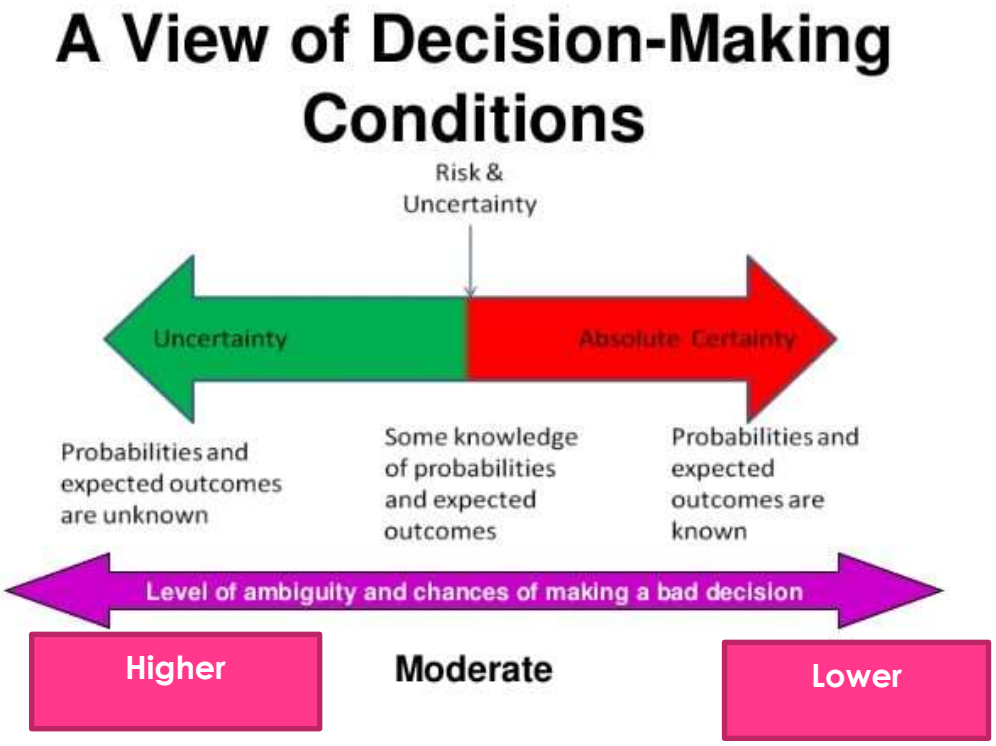
At top management level, the structured problem is selecting warehouse facilities, semi-structured problem is decision to embark on mergers/acquisition while unstructured problems are new product line, Research and Development(R&D).

6 Decision Making Conditions

- In general there are three different types of condition under which managers take decisions
- **The first condition is certainty**, which means that the available alternatives and their costs or benefits are certain. In other words, managers know with certainty that particular alternatives will lead to definite outcomes and there is no element of doubt. Given the current turbulent business environment it is not surprising that very

few decisions can be made with certainty. Only the most minor of decisions can be taken under a condition of complete certainty.

- **The second condition is risk**, Under the risk condition, all available choices and their potential costs and benefits are known, but the outcomes are sometimes in doubt. **So, while the alternatives are known, the outcomes are unknown.** An example of a risk condition is the throw of a die: the alternatives (one to six) are known, but the outcome is not known – there is a one-in-six chance of each number coming up. The probability of certain events can be calculated by the organisation using statistical techniques. Objective probability is the likelihood of an event occurring based on hard quantitative data, normally statistical. In contrast, subjective probability is a personal judgement of the likelihood of an event occurring. In today's business environment, risk taking has become critically important for organisations.
- **The final condition is uncertainty**, under which the available alternatives, the likelihood of their occurrence and the outcomes are all unknown. Decisions made under uncertainty are the most difficult to take because of this lack of concrete knowledge. Such decisions tend to be ambiguous, intangible and highly unusual.5 In the current business environment more and more decisions are taken under uncertainty. When making decisions under uncertain conditions, managers require intuition and judgement.



- When managers are faced with the choice of competing alternatives they frequently experience conflict, both within themselves and also from other individuals and groups in the organisation. In the first instance managers experience psychological conflict when faced with a range of alternatives, none of which they find appealing.
- In making decisions, managers also experience conflict with other members of the organisation. Different groups will protect the interests of their own work groups very carefully and will not want to see any reduction in status through declining resources. Unless the decision is construed to be a win–win scenario it is inevitable that some degree of conflict will emerge.
- Given that most managers face lack of structure and information, and uncertainty and conflict as they make decisions, it is not surprising that managerial decision making has become all the more challenging, yet also critically important, in recent years. Decisions that managers make about strategy and direction are typically characterised by uncertainty and conflict and result in demanding decision-making scenarios.

Types of Data Analytics

1. **Descriptive Analytics**

Descriptive analytics is the simplest type of analytics and the foundation the other types are built on. It allows you to pull trends from raw data and succinctly describe what happened or is currently happening.

Descriptive analytics answers the question, **"What happened?"**

For example, imagine you're analyzing your company's data and find there's a seasonal surge in sales for one of your products: a video game console. Here, descriptive analytics can tell you, "This video game console experiences an increase in sales in October, November, and early December each year."

Data visualization is a natural fit for communicating descriptive analysis because charts, graphs, and maps can show trends in data—as well as dips and spikes—in a clear, easily understandable way.

2. Diagnostic Analytics

Diagnostic analytics addresses the next logical question, **"Why did this happen?"**

Taking the analysis a step further, this type includes comparing coexisting trends or movement, uncovering correlations between variables, and determining causal relationships where possible.

Continuing the aforementioned example, you may dig into video game console users' demographic data and find that they're between the ages of eight and 18. The customers, however, tend to be between the ages of 35 and 55. Analysis of customer survey data reveals that one primary motivator for customers to purchase the video game console is to gift it to their children. The spike in sales in the fall and early winter months may be due to the holidays that include gift-giving.

Diagnostic analytics is useful for getting at the root of an organizational issue.

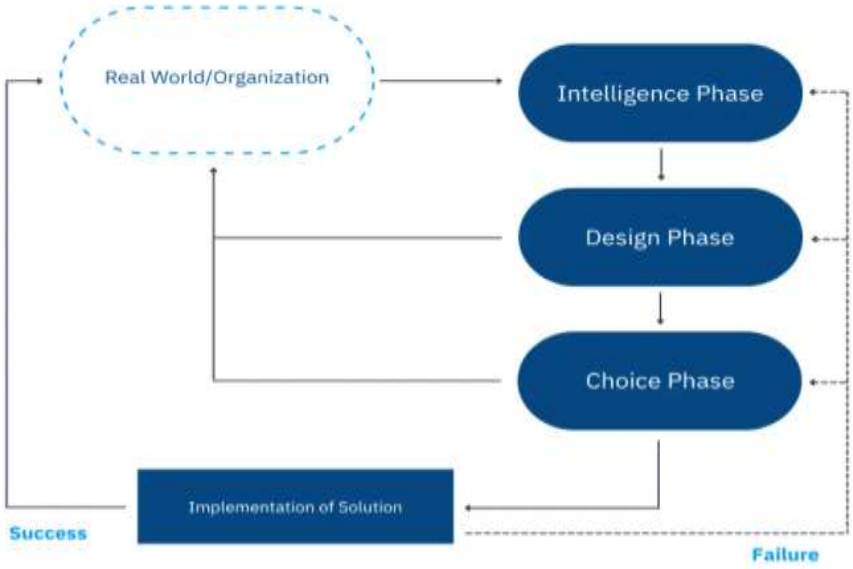
3. Predictive Analytics
Predictive analytics is used to make predictions about future trends or events and answers the question, **"What might happen in the future?"**
By analyzing historical data in tandem with industry trends, you can make informed predictions about what the future could hold for your company.
For instance, knowing that video game console sales have spiked in October, November, and early December every year for the past decade provides you with ample data to predict that the same trend will occur next year. Backed by upward trends in the video game industry as a whole, this is a reasonable prediction to make.
Making predictions for the future can help your organization formulate strategies based on likely scenarios.

4. Prescriptive Analytics
Finally, prescriptive analytics answers the question, **"What should we do next?"**
Prescriptive analytics takes into account all possible factors in a scenario and suggests actionable takeaways. This type of analytics can be especially useful when making data-driven decisions.

6.1 Simons Stages of Decision Making

Simon's model defines four phases of decision-making process:

- Intelligence Phase - In the first phase, decision makers examine reality and try to identify problems or opportunities correctly.
- Design Phase - The main goal of the design phase is to define and construct a model which represent a system, by defining relationships between collected variables.
- Choice Phase - In this phase we are actually making decisions. The end product of this phase is a decision.
- Implementation Phase - Implementation can be either successful or not. Successful implementation results with a solution to the defined problem. On the other hand, failure brings us back to the earlier phase.



6.2 Techniques of Programmed and Non Programmed Decision

Types of decision	Traditional technique	Modern Technique
Programmed: Routine, Repetitive (Solved by specific process)	• Habit • Clerical routine • Organisational structure	• Operational research • Electronic data processing
Non Programmed: One shot, Ill structured, Novel (Solved by general process)	• Judgement, Intuition & creativity • Rule of thumb • Selection & training of executive	• **Heuristic problem** solving technique (A heuristic, or a heuristic technique, is any approach to problem-solving that uses a practical method or various shortcuts in order to produce solutions that may not be optimal but are sufficient given a limited timeframe or deadline.)

** Used of IT will reduce dependence on middle managerial personnel called as RECENTRALISATION

6.3 HEURISTIC

Nobel-prize winning economist and cognitive psychologist Herbert Simon originally introduced the concept of heuristics in the 1950s. He suggested that while people strive to make rational choices, human judgment is subject to cognitive limitations. Purely rational decisions would involve weighing all the potential costs and possible benefits of every alternative.

How Heuristics Are Used?

Heuristics play important roles in both problem-solving and decision-making, as we often turn to these **mental shortcuts** when we need a **quick solution**.

Here are a few different theories from psychologists about why we rely on heuristics.

- Attribute substitution: People substitute simpler but related questions in place of more complex and difficult questions.
- Effort reduction: People use heuristics as a type of cognitive laziness to reduce the mental effort required to make choices and decisions.2
- Fast and frugal: People use heuristics because they can be fast and correct in certain contexts. Some theories argue that heuristics are actually more accurate than they are biased

Types of Heuristics

There are many different kinds of heuristics. While each type plays a role in decision-making, they occur during different contexts. Understanding the types can help you better understand which one you are using and when.

Availability

The availability heuristic involves making decisions based upon how easy it is to bring something to mind. When you are trying to make a decision, you might quickly remember a number of relevant examples. Since these are more readily available in your memory, you will likely judge these outcomes as being more common or frequently occurring.

For example, if you are thinking of flying and suddenly think of a number of recent airline accidents, you might feel like air travel is too dangerous and decide to travel by car instead. Because those examples of air disasters came to mind so easily, the availability heuristic leads you to think that plane crashes are more common than they really are.

Representativeness

The representativeness heuristic involves making a decision by comparing the present situation to the most representative mental prototype. When you are trying to decide if someone is trustworthy, you might compare aspects of the individual to other mental examples you hold. A soft-spoken older woman might remind you of your grandmother, so you might immediately assume that she is kind, gentle, and trustworthy.

Affect

The affect heuristic involves making choices that are influenced by the emotions that an individual is experiencing at that moment. For example, research has shown that people are more likely to see decisions as having benefits and lower risks when they are in a positive mood. Negative emotions, on the other hand, lead people to focus on the potential downsides of a decision rather than the possible benefits.

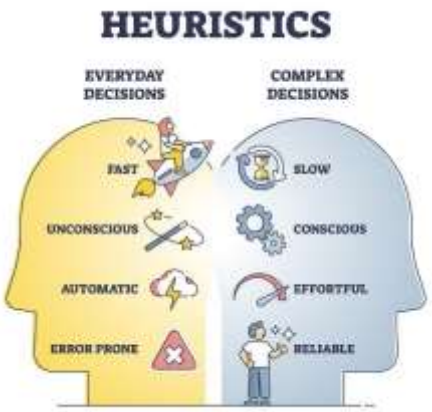
Anchoring

The anchoring bias involves the tendency to be **overly influenced by the first bit of information we hear or learn.** This can make it more difficult to consider other factors and lead to poor choices. For example, anchoring bias can influence how much you are willing to pay for something, causing you to jump at the first offer without shopping around for a better deal.

Working Backward

Working backwards is a useful heuristic in which you begin solving the problem by focusing on the end result. A problem-solving strategy in which the solver begins at the goal state and attempts to find a path back to the problem's starting conditions.

In this example, if a-7 = 13, then add 7 to each side, so that a -7 +7 = 13+7 , or a = 20.



7 The Psychology of Belief and Decision Making

Our thoughts and feelings, our actions and reactions, respond not to the world as it actually is—for we never know reality directly—but to the world as we believe it to be. Because of our beliefs, we brush our teeth or don't bother; we vote for BJP OR Congress; we eat certain foods and avoid others; we worship one deity or another or none at all, and we rely on scientific medicine or homeopathy to cure our ills."

Psychologists have identified several significant factors that influence our decision making. The most powerful include:

Past experience	Prior positive results can motivate a yes decision, but we also tend to avoid repeating past mistakes
Cognitive biases	These are stilted thinking patterns based on observations and generalizations that are often untrue. We tend to observe what we

	expect to see, even if its not there. Cognitive biases can be caused by a number of different things, but it is these mental shortcuts, known as heuristics, that often play a major contributing role.
Escalation of commitment	Am I in too deep already? If I say yes, what will it cost me further?
Individual differences	Age, socioeconomic status (can I afford this?), gender, locale, etc
Personal relevance	Will this decision matter to me? To others? Is it important?

There are numerous types of Cognitive Bias, Just go through once. Not possible to remember all, that too for qualifying section.

Selective Perception

This is the tendency to see a particular situation or issue from a chosen perspective. This is related to the team-based mentality. We see all situations or issues through a common lens that influences our ability to understand alternative or conflicting points of view or alternatives.

- **Confirmation Bias:** this self-serving bias refers to our tendency to look for information that confirms what we already believe. And we ignore information that would disprove our beliefs.
- **Availability Heuristic:** This is placing greater value on information that comes to your mind quickly. You give greater credence to this information and tend to overestimate the probability and likelihood of similar things happening in the future.
- **Halo Effect:** Your overall impression of a person influences how you feel and think about his or her character. This especially applies to physical attractiveness influencing how you rate their other qualities. When it's reported that a celebrity we admire has broken the law, the Halo Effect can cause us to believe this report is false. We just like this person too much to believe it's true.

- **Self-Serving Bias:** This is the tendency to blame external forces when bad things happen and give yourself credit when good things happen. When you win a poker hand it is due to your skill at reading the other players and knowing the odds, while when you lose it is due to getting dealt a poor hand.
- **Hindsight Bias:** this bias refers to our tendency to perceive events as more predictable after they happen.

- **Attentional Bias:** This is the tendency to pay attention to some things while simultaneously ignoring others. When making a decision on which car to buy, you may pay attention to the look and feel of the exterior and interior, but ignore the safety record and gas mileage.
- **Actor-Observer Bias (Fundamental attribution error):** This is the tendency to attribute your own actions to external causes while attributing other people's behaviors to internal causes. You attribute your high cholesterol level to genetics while you consider others to have a high level due to poor diet and lack of exercise.
- **Functional Fixedness:** This is the tendency to see objects as only working in a particular way. If you don't have a hammer, you never consider that a big wrench can also be used to drive a nail into the wall. You may think you don't need thumbtacks because you have no corkboard on which to tack things, but not consider their other uses. This could extend to people's functions, such as not realizing a personal assistant has skills to be in a leadership role.
- **Anchoring Bias:** This is the tendency to rely too heavily on the very first piece of information you learn. If you learn the average price for a car is a certain value, you will think any amount below that is a good deal, perhaps not searching for better deals. You can use this bias to set the expectations of others by putting the first information on the table for consideration.
- **Misinformation Effect:** This is the tendency for post-event information to interfere with the memory of the original event. It is easy to have your memory influenced by what you hear about the event from others. Knowledge of this effect has led to a mistrust of eyewitness information.
- **False Consensus Effect**: This is the tendency to overestimate how much other people agree with you.
- **Optimism Bias:** This bias leads you to believe that you are less likely to suffer from misfortune and more likely to attain success than your peers.
- **Ostrich Bias:** The ostrich effect is a cognitive bias that causes people to avoid information that they perceive as potentially unpleasant.

12 Cognitive Biases That Can Impact Search Committee Decisions

1. Anchoring Bias
Over-relying on the first piece of information obtained and using it as the baseline for comparison.

For example, if the first applicant has an unusually high test score, it might set the bar so high that applicants with more normal scores seem less qualified than they otherwise would.

PsychCentral: The Anchoring Effect and How it Impacts Your Everyday Life

2. Availability Bias
Making decisions based on immediate information or examples that come to mind.

If search committee members hear about a candidate from Georgia who accepted a job and then quit because of the cold weather, they might be more likely to assume that all candidates from the southern U.S. would dislike living in Minnesota.

VerywellMind: Availability Heuristic and Making Decisions

3. Bandwagon Effect
A person is more likely to go along with a belief if there are many others who hold that belief. Other names for this are "herd mentality" or "group think."

In a search, it may be difficult for minority opinions to be heard if the majority of the group holds a strong contrary view.

WiseGEEK: What is a Bandwagon Effect?

Psychology Today: The Bandwagon Effect

4. Choice-supportive Bias
Once a decision is made, people tend to over-focus on its benefits and minimize its flaws.

Search committee members may emphasize rationale that supports decisions they have made in the past. "We hired someone from a prestigious university last time and it worked out really well."

Plexxi: On Choice-Supportive Bias and the Need for Paranoid Optimism

5. Confirmation Bias
Paying more attention to information that reinforces previously held beliefs and ignoring evidence to the contrary.

A search committee member who believes that women are more intelligent might selectively focus on aspects of resumes that highlight the intelligence of female applicants.

Psychology Today: What is Confirmation Bias?

VerywellMind: Confirmation Bias

6. Fundamental Attribution Error
Overemphasizing personal factors and under-estimating situational factors when explaining other people's behavior.

For example, if an applicant is late to an interview the committee might conclude he is irresponsible or lazy, rather than remember that a major campus access road was closed unexpectedly.

Ethics Unwrapped: Fundamental Attribution Error

7. Halo Effect
Judging others similarly on all traits, assuming that because someone is good or bad at one thing they will be equally good or bad at another.

During a search, if a candidate has strong educational credentials the committee might conclude that she is also a strong leader.

The Economist: The Halo Effect

Robert Half: Hiring and the Halo-Effect Trap

8. Ingroup Preference Bias
People tend to divide themselves into groups, and then attribute positive attributes to their own group.

Search committee members who perceive commonalities with applicants are more likely to view them favorably.

Explore Psychology: What is the Ingroup Bias?

Understanding Prejudice: Ingroup Favoritism

9. The "Jerk" Factor
It's not a cognitive bias, but research has shown an academic tendency to over-value individuals who display "brilliant but cruel" behavior and to attribute less intelligence to people with "nice" behavior.

Search committee members can be unduly impressed by an academic star that builds himself up at the cost of behaving disrespectfully toward others.

WorkMatters: Brilliant but Cruel

10. Ostrich Effect
Avoiding bad news about a decision by ignoring data that might be negative.

For example, a committee may choose not to pay attention to data about how their choice affects diversity goals or minority employment rates.

99u: The Ostrich Problem and the Danger of Not Tracking Your Progress

Effectiviology: The Ostrich Effect-On the Danger of Burying Your Head in the Sand

11. Recency Effect
Recent events are easier to remember, and can be weighed more heavily than past events or potential future events.

In a search, candidates that were interviewed early in the process may be evaluated less favorably. A similar bias is the proximity effect, in which candidates interviewed in person are viewed more favorably than those interviewed via distance technology.

SKYbrary: Recency Bias

12. Zero-risk Bias
Preferring the choice that provides certainty of a smaller benefit as opposed to an alternative with more risk and greater potential benefit.

Search committees may seek to avoid risk by hiring a "safer" candidate with a greater perceived likelihood of success rather than taking a reasonable amount of risk.

Decision Lab: Zero Risk Bias

7.1 Decision Making Process

7.2 As per Mary K Coulter and Stephen P. Robbins, there are eight steps to Decision-Making

1. Identifying the Problem 2. Identifying Decision Criteria 3. Allocating Weights to the Criteria 4. Developing Alternatives 5. Analyzing Alternatives 6. Selecting an Alternative 7. Implementing the Decision 8. Evaluating the Decision's Effectiveness.

8 Approaches to decision making

8.1 The concept of rationality

- Rationality in relation to decision making refers to a process that is perfectly logical and objective, whereby managers gather information objectively, evaluate available evidence, consider all alternatives and eventually make choices that will lead to the best outcomes for the organisation.
- The rational approach to decision making has its foundations in traditional economic theory, which argues that managers attempt to maximise benefits and have the capacity to make complex decisions quickly. Such a rational approach to decision making assumes that four conditions are fulfilled:

  1. There is perfect knowledge of all the available alternatives.

  2. There is perfect knowledge of all of the consequences of the available alternatives.

  3. Managers have the capacity to objectively evaluate the consequences of the available alternatives.

4. Managers have a well-structured and definite set of procedures to allow them to make optimum decisions.

8.2 Bounded rationality

- As we have seen, decisions are made under varying conditions ranging from certainty and risk to uncertainty.
- In the current environment managers seldom make decisions under the conditions of certainty that would be needed to apply a completely rational model.
- For many managers today the rational approach represents an ideal approach, but one that is simply not attainable under current conditions of risk and uncertainty.
- Given the fact that managers cannot always make decisions under certainty conditions, and in a rational manner, they have to apply a less than perfect form of rationality.
- **Herbert Simon called this 'bounded rationality'**, and argued that decisions taken by managers are **bounded by limited mental capacity and emotions, and by environmental factors** over which they have no control. Due to these limitations managers rarely maximise or take ideal decisions with the best possible outcomes.
- Intuition and judgement are therefore used by the manager to solve problems and make decisions.
- Taking a rational approach to problem solving and decision making involves clear **identification of goals, objectives, alternatives, potential consequences and their outcomes.**
- Each of these is in turn evaluated in terms of contribution to the overall aim. In judgemental decision making, the response to the need for a decision is usually rapid – too rapid to allow for an orderly sequential analysis of the situation – and the decision maker cannot usually give a veridical account of either the process by which the decision was reached or the grounds for judging it correct.11
- **Psychological biases** can influence judgement. For example, a manager might have to make a decision about where to establish a subsidiary office of the organisation. When making the decision the manager could be influenced by personal opinions, emotions and personal bias in favour of one location over another. This might be particularly noticeable if the manager is subsequently going to work in the office, as the choice might be heavily influenced by his/her desire to live in one location. In this way, total rationality is not applied as the manager may choose a location that s/he favours and this will not necessarily be the most rational choice.
- Another integral part of the bounded rationality approach is the notion that managers seek to satisfice, that is, settle for an **alternative which is satisfactory**, rather than continuing to search for the optimal solution. Satisficing may occur because the manager tires of the decision-making process and seeks to resolve the problem

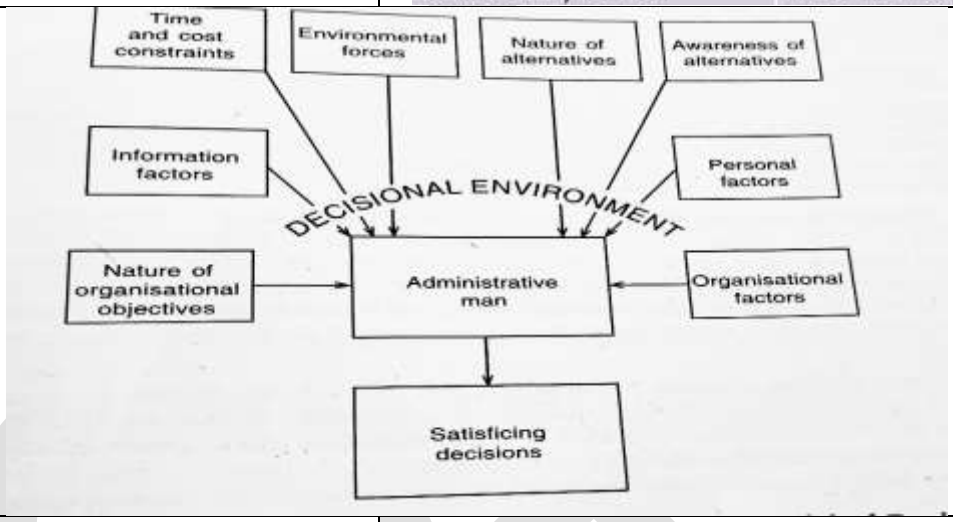
quickly with the first minimally acceptable solution rather than searching further for a better one.

- Managers may also be unable to handle large amounts of complex information. Bounded rationality also recognises that managers may not have full and complete information and may experience problems processing information, which clearly affects a manager's ability to make optimal decisions.
- Decisions made under bounded rationality may not always be the best; however, on occasion good decisions have been made on the basis of judgement and gut feeling.

Simon Bounded Rationality Model **<u>Administrative Man Model</u>** **(While Economic Man concept was given by Webber which is based on complete rationality)** Simon believed that total rationality is impossible in administrative behaviour. Hence, 'maximising decisions is also not possible. He observed that human behaviour in an organisational setting is characterised by **"bounded rationality'** (limited rationality) leading to 'Satisficing decisions' as against **'maximising decisions'** (optimising decisions). **Satisficing** (a word derived from the combination of words, "Satisfaction' and 'sufficing') decision implies that a decision-maker chooses an alternative which is satisfactory or good enough. The following factors are responsible for bounded rationality leading to satisficing decisions. (i) **Dynamic** (rather than static) nature of organisational objectives. (ii) **Imperfect (inadquate)** information as well as limited capacity to process (analyse) the available information. (iii) **Time and cost constraints.**	• Also known as Behavioral Alternative Model (BAM) • It is alternative model to economic rationality model • Alternatives selected in terms of **"VALUE"** Type of rationality (i) **objectively rational** if in fact it is the correct behaviour for **maximising given values** in a given situation. **Road or School ?** (ii) **subjectively rational** if it **maximises attainment relative to the actual knowledge** of the subject. (iii) **consciously rational** to the degree that the adjustment of means to ends is a conscious process. (iv) **deliberately rational** to the degree that adjustment of means to ends has been deliberately brought about (by the individual or by the organisation) (v) **organisationally relational** if it is oriented to the organisation's goals. (vi) **personally rational** if it is oriented to the individual's goals According to Simon fundamental criterion guiding an administrator is **EFFICIENCY**

(iv) **Environmental forces** or external factors.
(v) Alternatives cannot be always quantified in an ordered preference.
(vi) **Decision-maker** may not be aware of all the possible alternatives available and their consequences.
(vii) **Personal factors** of the decision-maker like preconceived notions, habits, and so on.
(viii) **Organisational factors** like procedures, rules, channels of communication, and so on. Simon's bounded rationality model of decision-making can be illustrated

Economic	Administrative
Makes decisions in a very rational manner	Makes decisions that are good enough.
Has complete knowledge of the problem or decision situation.	Because complete knowledge is not possible, knowledge is always fragmented.
Has a complete list of possible alternatives.	Because consequences of alternatives occur in the future, they are impossible to predict accurately.
Has a rational system of ordering preference of alternatives.	Usually chooses from among a few alternatives, not all possible ones.
Selects the decision that will maximize utility function.	The final choice is "satisficing" rather than maximizing.



Lindbolom Incremental Model	• He advocated this in his article *The science of muddling through* • Advocated **Incremental model** • Also known as **branch technique** • He used two concepts **marginal incrementalism and Partisian mutual adjustment** • A small number of alternatives and consequences are considered at each stage of the decision-making process. As a result, the costs of making a decision are minimized. As each step is proposing only a small change; the immediate effect is minimal and usually not disruptive
Etizioni Mixed scanning Model	• Advocated in his article a third approach to decision making • It **combines rational comprehensive model (Rationalism) and Incremental model (Incrementalism)**
Dror's Optimal Model	• Advocated in his article Public Policy making re examined • Dror's **optimal model is rationalist model of policy making.** • Dror criticised incremental as unsatisfactory and conservative. It creates gap between those with more power and less power. Dror's optimal model is

	a combination of economically rational model and extra rational model.
Garbage Can Model	• The garbage can model of decision-making illustrates how problems and solutions are placed in the same location and matched during choice opportunities when decisions need to be made. The choice opportunity represents a garbage can while problems and solutions are placed inside like trash

8.2.1 Economic Man Vs Administrative Man

Economic Man

- ❖ The concept of economic man was evolved by classical economic theorists. The economic man is as completely rational in every way. Regarding his decision-making activities, following conditions are assumed:
- ❖ The decision will be completely rational in means and ends sense.
- ❖ There is a complete and consistent system of preferences, which allows a choice among alternatives.
- ❖ There is a complete awareness of all possible alternatives.
- ❖ There are no limits of computations that can be performed to determine the best alternative.
- ❖ Probability of calculations are neither frightening nor mysterious.

Administrative Man

- ❖ Simon has presented the idea of administrative man who is a descriptive model of decision-making behaviour. Simon presents a more realistic sequel to the classical economic man. He summarized administrative man's behaviour as follows:
- ❖ In choosing between alternatives he attempt to satisfy or look for the one, which is satisfied, or good enough.
- ❖ He recognizes that the world he perceives is a drastically simplified model of the real world. His content with this simplification because he believes the world is mostly empty.
- ❖ Because he satisfies, rather than maximises he can make his choice without first determining all possible alternatives and without ascertaining that these are in fact all the alternatives.
- ❖ Because he treats the world as rather empty, he is able to make decisions with relatively simple rules of thumb or tricks of the trade, or from force of habit. These techniques do not make impossible demands upon his capacity for thought.
- ❖ This administrative man tries to be **rational and satisfying, rather than maximizing**. Administrative man does not work on the basis of perfect knowledge, which is mostly

a real situation. The difference between economic and administrative man is one of relative degree because under some conditions, satisfying approaches may be maximizing, are very far apart. Administrative man model represents to, real situation of decision-making behaviour. **Economic man represents a very hypothecation position to assist the analysis. Administrative man model hold good for managerial decision-making behaviour.**

8.3 The political model

- While the previous approaches have concentrated on the role played by rationality in the decision- making process, the political model concentrates on **the impact of organisational politics on decision making.**
- Power and politics play an important role in the decision-making process.
- Power is the ability to influence others. In the context of an organisation power can be viewed as the ability to exert influence over individuals, work groups or departments. There are five main types of power found in the organisational setting:

  1. **Legitimate power** originates from the manager's position within the organisation's hierarchy. The power is inherent in the hierarchical position the manager occupies.

  2. **Reward power** originates from the manager's ability to withhold rewards from others.

  3. **Expert power** derives from the expert knowledge and information that an individual/manager has amassed.

  4. **Referent power** originates from the charisma or identification that a manager has developed.

  5. **Coercive power** is associated with emotional or physical threats to ensure compliance.

- In the decision-making process those who possess power are clearly an important dynamic.
- Political decision processes are used in situations where **uncertainty, disagreement and lack of information are common.**
- Within organisations it is common to find different coalitions, all of which possess varying degrees of power depending on the situation.
- Coalitions can be formed by particular work groups, teams, managers, functional specialists, external stakeholders and trade unions. Each group brings with it certain ideas and values, coupled with power, in relation to the decision under discussion.

- It is common for each coalition to defend its own territory and to ensure that any decisions made do not negatively impact on its members (both formal and informal). The presence of coalitions therefore adds an important ingredient to the decision-making process.
- Different coalitions are likely to possess different and conflicting objectives. Depending on the relative power of each coalition, negotiation and compromise will feature strongly.
- In some cases the compromise and outcome will be a win–lose situation, which means that one coalition's gain is another's loss. In other cases a win–win situation can be generated.
- The political model recognises that, apart from actually making the decision, many other factors are at work, including negotiation, compromise and power struggles.
- The presence of political forces can be beneficial to the decision-making process if it means that a wider range of issues is considered and greater input and commitment is achieved. On the other hand, power struggles may lead to a lack of focus on key issues and produce narrowly defined decisions largely following the self-interest of particular groups.

8.4 Escalation of commitment

- Escalation of commitment is a human behavior pattern in which an individual or group facing increasingly negative outcomes from a decision, action, or investment nevertheless **continues the behavior instead of altering course**

- While it **does not explain how decisions are made, this approach concentrates on why people continue to pursue a failing course of action**: that is, why commitment to a poor decision often escalates after the initial decision has been made.
- This approach is particularly concerned with decision makers who, even in the face of failure, continue to invest resources in a failing decision. For example, an organisation may decide to enter a particular market by introducing a certain product. After a little while it may become obvious that the product is not suited to that market.

- The organisation, however, continues to increase spending on advertising and marketing rather than exiting from the market.
- Escalation of commitment to a failing decision is often attributed to self-justification and a feeling of personal responsibility for the decision.
- When individuals are personally responsible for negative consequences they may decide to increase investment of resources in a previously chosen course of action.
- Organisations therefore have to strike a balance between persevering with a decision and recognising when a decision is failing and should be abandoned.
- Not all organisations fall into the escalation of commitment trap.

8.5 Prospect Theory (Loss aversion)

Alternative theories of how people make decisions include Amos Tversky's and Daniel Kahneman's prospect theory. Prospect theory reflects the **empirical** finding that, contrary to rational choice theory, people fear losses more than they value gains, so they weigh the probabilities of negative outcomes more heavily than their actual potential cost.

Perceived gain vs Perceived loss

9 Group and Individual Decision Making

Task forces, teams and boards are all examples of where decision making occurs in a group setting. The basic idea behind group decision making is the notion that two heads are better than one. Generally the diversity of groups facilitates better-quality decisions. However, a group can be inferior to the best individual in the group. In some cases, groups will provide the best-quality decisions and in others the individual will do better. In coming to a conclusion about the efficiency of groups it is necessary to consider the advantages and disadvantages of group decision making.

Having considered the advantages and disadvantages of group decision making, it is clear that group decision making is well suited to certain circumstances. We can identify factors that favour individual and group decision making.

Factors favouring individual decision making include:

- Short time frame.
- Decision is relatively unimportant to the group.
- Manager has all the data needed to make the decision.
- One or two members of the group are likely to dominate.
- Conflict is likely.
- People attend too many meetings.
- The data is confidential.

- Group members are not sufficiently qualified.
- The manager is dominant.
- The decision does not directly affect the group.

Factors favouring group decision making include:

- Creativity is required.
- Data is held by the group.
- Acceptance of the solution by group members is important.
- Understanding of the solution is important.
- The problem is complex and needs a broad range of knowledge.
- The manager wants to build commitment.
- More risk taking is involved.
- Better understanding of group members is needed.
- The group is responsible for the decision.
- The manager wants feedback on idea

10 Qualitaive and Quantitative DM

Some of the qualitative techniques of decision making are:-
1. Intuitive Approach(value, ethics, emotion, knowledge) 2. Delphi Technique 3. Brainstorming 4. Nominal Group Technique (NGT) 5. Multi-Voting 6. Didactic Interaction.

Some of the quantitative techniques of decision making are:-
1. Management Information Systems (MIS)(L+N) 2. Decision Support System (DSS)(L+N) 3. Decision Tree 5. Decision Matrix 6. Cost Benefit Analysis(L+N) 7. Payback Analysis 8. Simulation 9. Network Analysis 10. Operations Research.

10.1 Group DM

10.1.1 Brain Storming

- Quantitative in nature – Generate as many ideas as possible
- **By Alex Osborn**
- Brainstorming technique involves a group of people, usually between five and ten, sitting around a table in a classroom setting generating ideas in the form of free association.
- The primary focus of the brainstorming technique is more on '**generation of ideas'**, rather than on 'evaluation of ideas', the idea being that if a large number of ideas can be generated, then it is likely that there will be a unique and creative solution among them.

- No criticism of ideas

10.1.2 Delphi Technique (Forecasting)

Delphi technique is a modification of brainstorming technique that it involves obtaining the opinions of **experts physically separated from each other and unknown to each other.** Generally, the problems handled by this technique are not specific in nature or related to a particular situation at a given time.

The Delphi method is a technique used in group decision-making and some forms of **qualitative research.** It involves gathering a panel of experts, having them complete a survey or questionnaire individually, and sharing these anonymised answers within the panel to allow for feedback and debate. Each expert is presented with the questions again, and the process is repeated. It is expected that all opinions will eventually converge around a general consensus. The Delphi method has been used extensively in forecasting, especially in business and technology. It's also a commonly used tool in public policy: when policymakers use panels of experts to inform decisions around issues like healthcare, education and climate change, they frequently make use of the Delphi method. The organisation behind the Delphi method, RAND Corp

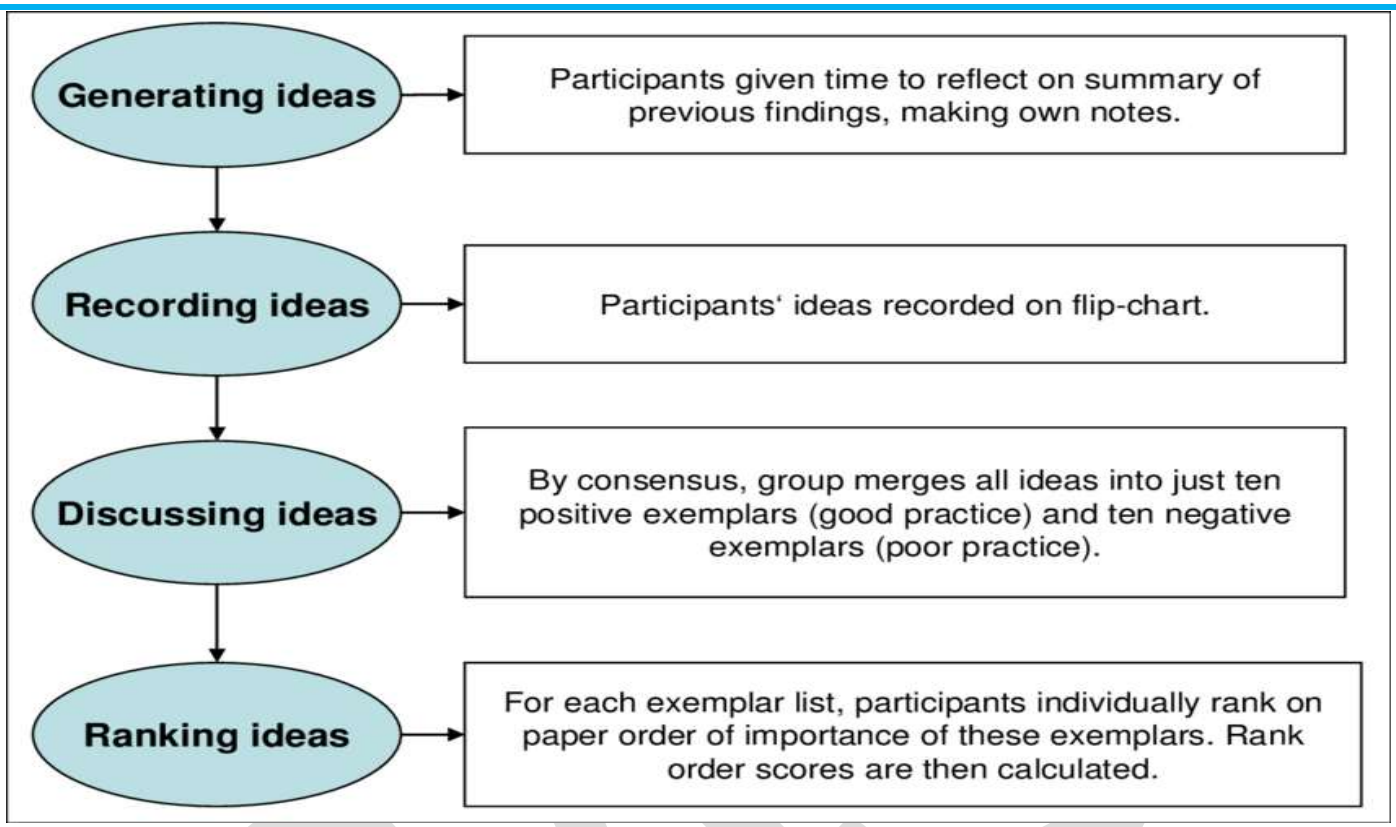
- **Olaf Helmer and Norman Dalkey** ideated the method.
- First introduced in the year 1950.
- The founding members were part of Rand Corporation.
- 'Delphi' is derived from the Greek name 'Oracle of Delphi'.
- It helps get a mutual agreement towards a standard solution.
- This is regarded as an exploratory and detailed procedure.
- It can happen across the globe and involves collecting streamlined and structured information.
- The process remains anonymous, and the experts can share feedback without any discretions.
- The method was first tested in the Cold War to forecast the impact of technology on warfare.
- The first step involves the selection and choosing of a facilitator. It is recommended to select a neutral person who remains unbiased throughout the process.
- The main disadvantage of this technique is that it is highly time consuming and is primarily useful in illuminating broad range, long term complex issues such as future effects of energy shortages that might occur. This technique also eliminates the sense of motivation that arises in a face to face interacting group.

Example

- The Delphi technique has big applications in solving high-impact business projects and sensitive political issues
- The Delphi method is used for research and forecasting problems whose solutions are not yet determined.
- The Delphi method is a popular choice for forecasting when the anonymity of subject matter experts is required on difficult subjects or topics such as political significance.

10.1.3 Nominal Technique

- The Nominal Technique is very similar to Brainstorming but is considered to be more effective. This may be due to **highly structured procedures** employed for generating and analyzing various ideas and alternatives. It may be physically domination is avoided. The process is similar-to a traditional committee meeting expect that the members operate independently, generating ideas for solving the problem in silence and in writing. The group leader or the coordinator either collects these written ideas or writes them on a large blackboard as he received it. **These are then discussed one by one**, in turn, and each participant is encouraged to comment on these ideas for the purpose of clarification.
- After all ideas are discussed and clarified, they are evaluated for their merits and drawbacks and each participating member is required to vote on each idea and **assign it a rank** on the basis of priority of each alternative solution.
- The idea with the highest aggregate ranking creates an atmosphere of creativity because participants often work hard to generate ideas in the presence of others.

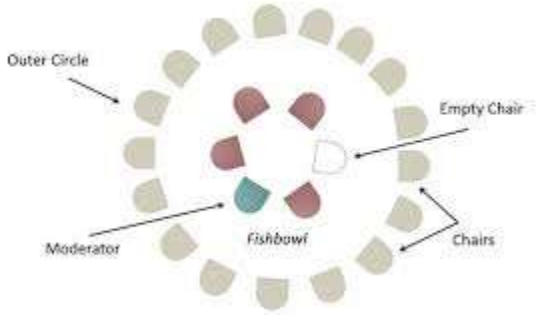


10.1.4 Fish Bowling Techniquee

Fishbowling is another variation of the brainstorming but is **more structured** and is to the point. In this technique, the decision-making group of experts is seated around a circle with a single chair in the center of the circle. One member of the group or the group leader is invited to sit in the center chair and give his view about the problem and his proposition of a solution. The other group members can ask him questions but there is no irrelevant discussion or cross talk. Once the member in the center chair has finished talking and his viewpoint is fully understood, he leaves the center and joins the group in the circle. Then the second member is called upon to sit in the center chair and give his views in the light of the views expressed earlier.

This technique result in each member favoring a particular course of action, since all members are acting upon the database and also since each idea offered by the central members has been thoroughly questioned and examined. After all experts have expressed their views, the entire groups discuss the various alternatives suggested and pick the one with consensus.

Fishbowl is a strategy for organizing medium- to large-group discussions. Students are separated into an inner and outer circle. In the inner circle or fishbowl, students have a discussion; students in the outer circle listen to the discussion and take notes.



10.1.5 Didactic Method

- Didactic interaction is applicable only in certain situations (**Yes/No Situation),** but is an excellent method when such a situation. For example, the decision may be to buy or not to buy, to situation requires an extensive and exhaustive discussion and investigation since a wrong decision can have serious consequences of either of the two alternatives, the group required to make the decision is split into two subgroups, one favoring the 'go' decision and other favoring the 'no go' decision.
- The **first subgroup** lists all the 'pros' of the problem solution and the **second subgroup** lists all the 'cons'. These two groups meet and discuss their findings and their reason.
- After the exhaustive discussions, the **group switch ideas** and try to **find weakness in their own original viewpoints.**
- **This interchange of ideas and tolerance and understanding of opposite viewpoint** results in mutual acceptance of facts as facts as they exist so that a solution can be built around these facts and thus a final decision is reached.

10.1.6 Quality Circles

Quality circle is a people building philosophy based on the premise that an employee doing a particular job is biggest expert of that field and thus is in a better position to identify, analyse and resolve the work related problems through their innovative and unique ideas. • In fact, it is a practical application of McGregor's Theory 'Y' that if given the right environment and decision making power, people will enjoy and take pride in their work thus leading to enrichment of their work life. • Quality circle is a small group of employees in the same work area or doing similar type of work who voluntarily meets regularly for about an hour every week to identify, analyse and resolve work related problems. The objective is to improve quality, productivity and the total performance of the organisation and also to enrich the quality of work life of employees.

10.1.7 Network Technique

Network analysis helps management to minimize the total cost and total maintenance time. With the use of network analysis cost of production can be minimized through reducing the maintenance time

Classification of Network Techniques: There are number of network techniques which are used by the various people according to their purpose. The main techniques are given below:

1. **CPM:** It is popularly known as Critical Path Method. Critical path method is a project management tool used to formulate a time frame for a project in order to determine where potential delays are most likely to take place. (By James Kelly and Morgan Walker)

2. **PERT:** The Programme Evaluation and Review Technique is basically a scheduling technique. It helps project manager in planning, scheduling, monitoring, evaluating, and controlling large and complex projects. It is a probabilistic model and introduces uncertainties in project network.

PERT is a visual project management technique where we plan, schedule, organize, coordinate and control uncertain activities. Whereas CPM is a statistical technique where we plan, schedule, organize, coordinate and control well-defined activities. CPM is a method used to control cost and time.

Abbreviation	
PERT – Project Evaluation and Review Technique	CPM – Critical Path Method
What does It Mean?	
PERT – PERT is a popular project management technique that is applicable when the time required to finish a project is not certain	CPM – CPM is a statistical algorithm which has a certain start and end time for a project
Model Type	
PERT – PERT is a probabilistic model	CPM – CPM is a deterministic model
Focus	
PERT – The main focus of PERT is to minimise the time required for completion of the project	CPM – The main focus of CPM is on a trade-off between cost and time, with a major emphasis on cost-cutting.
Orientation type	
PERT – PERT is an event-oriented technique	CPM – CPM is an activity-oriented technique

3. **GERT:** The Graphical Evaluation and Review Technique is a new technique and superior over the above mentioned techniques. In this analysis only simulation can be used.

4. **LOB:** It is known as Line of Balance technique. Line of balance is a graphical technique to show the progress achieved during the project with the help of key events.

5. **PERT/Cost**: It is an extension of the PERT technique to cover the cost of project. It is not only helpful to plan the completion of project within a specific time but also within a specific cost.

11 Techniques in Decision Making

The techniques are: 1. Marginal Analysis 2. Financial Analysis 3. Break-Even Analysis 4. Ratio Analysis 5. Operations Research Techniques 6. Linear Programming 7. Waiting-line Method 8. Game Theory 9. Simulation 10. Decision Tree.

Marginal Analysis:

• This technique is used in decision-making to figure **out how much extra output will result if one more variable** (e.g. raw material, machine, and worker) is added. In his book, 'Economics', Paul Samuelson defines marginal analysis as the extra output that will result by adding one extra unit of any input variable, other factors being held constant.

• Marginal analysis is particularly useful for evaluating alternatives in the decision-making process.

Financial Analysis:

•This **decision-making tool is used to estimate the profitability of an investment, to calculate the payback period (**the period taken for the cash benefits to account for the original cost of an investment), and to analyze cash inflows and cash outflows.

•Investment alternatives can be evaluated by discounting the cash inflows and cash outflows (discounting is the process of determining the present value of a future amount, assuming that the decision-maker has an opportunity to earn a certain return on his money).

Break-Even Analysis:

•**This tool enables a decision-maker to evaluate the available alternatives based on price, fixed cost and variable cost per unit.** Break-even analysis is a measure by which the level of sales necessary to cover all fixed costs can be determined.

•Using this technique, the decision-maker can determine the break-even point for the company as a whole, or for any of its products. At the break-even point, total revenue equals total cost and the profit is nil.

Ratio Analysis:

•**It is an accounting tool for interpreting accounting information. Ratios define the relationship between two variables**. The basic financial ratios compare costs and revenue for a particular period. The purpose of conducting a ratio analysis is to interpret financial statements to determine the strengths and weaknesses of a firm, as well as its historical performance and current financial condition.

Operations Research Techniques:

•One of the most significant sets of tools available for decision-makers is operations research**. An operation research (OR) involves the practical application of quantitative methods in the process of decision-making. When using these techniques, the decision-maker makes use of scientific, logical or mathematical means to achieve realistic solutions to problems. Several OR techniques have been developed over the years**.

Linear Programming:

• Linear programming is a **quantitative technique used in decision-making. It involves making an optimum allocation of scarce or limited resources of an organization to achieve a particular objective. The word 'linear' implies that the relationship among different variables is proportionate.**

This technique basically helps in maximizing an objective under limited resources. The objective can be either optimization of a utility or minimization of a disutility. In other words, it helps in utilizing a resource or constraint to its maximum potential.

Managers generally use this technique only under conditions involving certainty. Hence, it might not be very useful when circumstances are uncertain or unpredictable.

• The term 'programming' implies developing a specific mathematical model to optimize outputs when the resources are scarce. In order to apply this technique, the situation must involve two or more activities competing for limited resources and all relationships in the situation must be linear.

• Some of the areas of managerial decision-making where linear programming technique can be applied are:

- i. Product mix decisions
- ii. Determining the optimal scale of operations
- iii. Inventory management problems
- iv. Allocation of scarce resources under conditions of uncertain demand
- v. Scheduling production facilities and maintenance.

Probability Decision Making (PDM)

- This technique lies in the premise that we can only predict the probability of an outcome**. In other words, we cannot always accurately predict the exact outcome of any course of action**.
- Managers use this approach to first determine the probabilities of an outcome using available information. They can even rely on their subjective judgment for this purpose. Next, they use this data of probabilities to make their decisions. They often use 'decision trees' or pay-off matrices for this purpose.

Waiting-line Method:

•This is an operations research method that uses a mathematical technique for balancing services provided and waiting lines. Waiting lines (or queuing) occur whenever the demand for the service exceeds the service facilities.

•Since a perfect balance between demand and supply cannot be achieved, either customers will have to wait for the service (excess demand) or there may be no customers for the organization to serve (excess supply).

• When the queue is long and the customers have to wait for a long duration, they may get frustrated. This may cost the firm its customers. On the other hand, it may not be feasible for the firm to maintain facilities to provide quick service all the time since the cost of idle service facilities have to be borne by the company.

• The firm, therefore, has to strike a balance between the two. The queuing technique helps to optimize customer service on the basis of quantitative criteria. However, it only provides vital information for decision-making and does not by itself solve the problem. Developing queuing models often requires advanced mathematical and statistical knowledge.

Game Theory:

• This is a systematic and sophisticated technique that enables competitors to select rational strategies for attainment of goals. Game theory provides many useful insights into

situations involving competition. This decision-making technique involves selecting the best strategy, taking into consideration one's own actions and those of one's competitors.

Sometimes, managers use certain quantitative techniques only while taking decisions pertaining to their business rivals. The game theory approach is one such technique.

This technique basically simulates rivalries or conflicts between businesses as a game. The aim of managers under this technique is to find ways of gaining at the expense of their rivals. In order to do this, they can use 2-person, 3-person or n-person games.

• The primary aim of game theory is to develop rational criteria for selecting a strategy. It is based on the assumption that every player (a competitor) in the game (decision situation) is perfectly rational and seeks to win the game.

• In other words, the theory assumes that the opponent will carefully consider what the decision¬-maker may do before he selects his own strategy. Minimizing the maximum loss (minimax) and maximizing the minimum gain (maximin) are the two concepts used in game theory.

Queuing Theory

- Every business often suffers waiting for periods or **queues pertaining to personnel, equipment, resources or services.**
- For example, sometimes a manufacturing company might gather a stock of unsold goods due to irregular demands. This theory basically aims to solve such problems.
- The aim of this theory is to minimize such waiting periods and also reduce investments on such expenses.
- For example, departmental stores often have to find a balance between unsold stock and purchasing fresh goods. Managers in such examples can employ the queuing theory to minimize their expenses.

Simulation:

• This technique involves building a model that represents a real or an existing system. Simulation is useful for solving complex problems that cannot be readily solved by other techniques. In recent years, computers have been used extensively for simulation. The different variables and their inter¬relationships are put into the model.

• When the model is programmed through the computer, a set of outputs is obtained. Simulation techniques are useful in evaluating various alternatives and selecting the best one. Simulation can be used to develop price strategies, distribution strategies, determining resource allocation, logistics, etc.

Networking

Complex activities often require concentrated efforts by personnel in order to avoid wastage of time, energy and money. This technique aims to solve this by creating strong network structures for work.

There are two very important quantitative techniques under this approach. These include the Critical Path Method and the Programme Evaluation & Review Technique. These techniques are effective because they segregate work efficiently under networks. They even drastically reduce time and money.

Decision Tree:

• This is an interesting technique used for analysis of a decision. A decision tree is a sophisticated mathematical tool that enables a decision-maker to consider various alternative courses of action and select the best alternative. A decision tree is a graphical representation of alternative courses of action and the possible outcomes and risks associated with each action.

• In this technique, the decision-¬maker traces the optimum path through the tree diagram. In the tree diagram the base, known as the 'decision point,' is represented by a square. Two or more chance events follow from the decision point. A chance event is represented by a circle and constitutes a branch of the decision tree. Every chance event produces two or more possible outcomes leading to subsequent decision points.

12 Tools of DM

12.1 PUGH MATRIX

The Pugh Matrix is a **criteria-based decision matrix which uses criteria scoring to determine which of several potential solutions or alternatives should be selected.** The technique gets its name from Stuart Pugh and has become a standard part of Six Sigma methodology. It is typically used after the development of the VOC (Voice of the Customer) and after the creation of a QFD (Quality Function Design). Helps to remove subjectivity

The Pugh Matrix may be know by a number of other names, including:

- Decision matrix/grid
- Selection matrix/grid
- Problem matrix
- Opportunity analysis
- Criteria rating form

- Criteria-based matrix

The Pugh Matrix:

- Allows the analyst to organize various criteria (or features) of a solution in a structured way for easy comparison
- Facilitates a team-based process for disciplined concept generation and selection
- Allows the analyst to develop a optimal solution which is a hybrid of other strong solutions

Sample Pugh Matrix

The steps for creating a Pugh Matrix are as follows:

- **Identify relevant user requirement or criteria**. The example shows very generic criteria. A read life example would be more specific.
- **Develop weights(Datum) for each of the requirements**. This is optional for weighting the scores. Various weighting strategies can be used.
- **Generate several viable alternatives** for a solution.
- **Select one of the alternatives as a baseline**. This is often a current state solution.
- **Evaluate each alternative against the baseline scoring it as positive, negative or equal in meeting the criteria.**
- **Total the values from each alternative**, multiplying each value by its weight if the optional scoring mechanism was used. (See step 2).
- **Combine the best elements of each alternative** to create an optimal hybrid solution.

Criteria	Datum	Sports	Luxury	Vintage	Family
Mileage	0	-1	-1	0	0
Style	0	+1	+1	+1	+1
Safety	0	+1	0	0	+1
Cost	0	-1	-1	-1	-1
space	0	-1	0	0	+1
Total		-1	-1	+1	+2
Rank				2nd	Ist

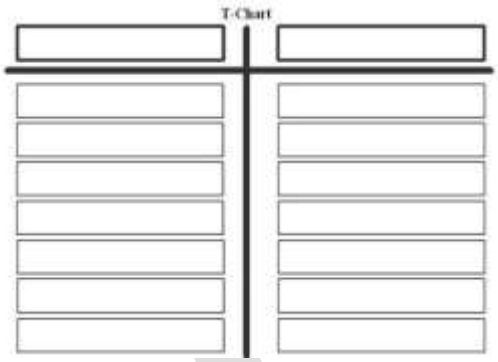
12.2 T-Chart

Pros and cons list: Decision-makers use a T-chart – or pros and cons list – to weigh the benefits and disadvantages of the options. It ensures that all positives and negatives are considered when making a decision.

The T-Chart technique is a systematic demonstration of the varying factors that need to be considered during the decision-making process. This technique can be used to ensure that both the positive and negative factors linked to a decision are tabled in the form of a list and can be used when weighing the pros and cons of a decision. It is used to examine two facets of an object, event or concept for comparison, for example, what are the pros and cons of replacing the existing system?

How it works

The simplicity and efficiency of the T-chart ensures that all the participants remain attentive and that they miss nothing during workshops or focus group sessions. When analysing pros and cons, the analyst can divide a large board into a "T" thereby differentiating the points against or in favour of the central idea. Participants can therefore contribute their opinions based on the observations they make which are indicated on either side of the "T" and labelled pros and cons. The T-chart can be used for assessing available options.



The T-chart can assist the analyst in the following ways:

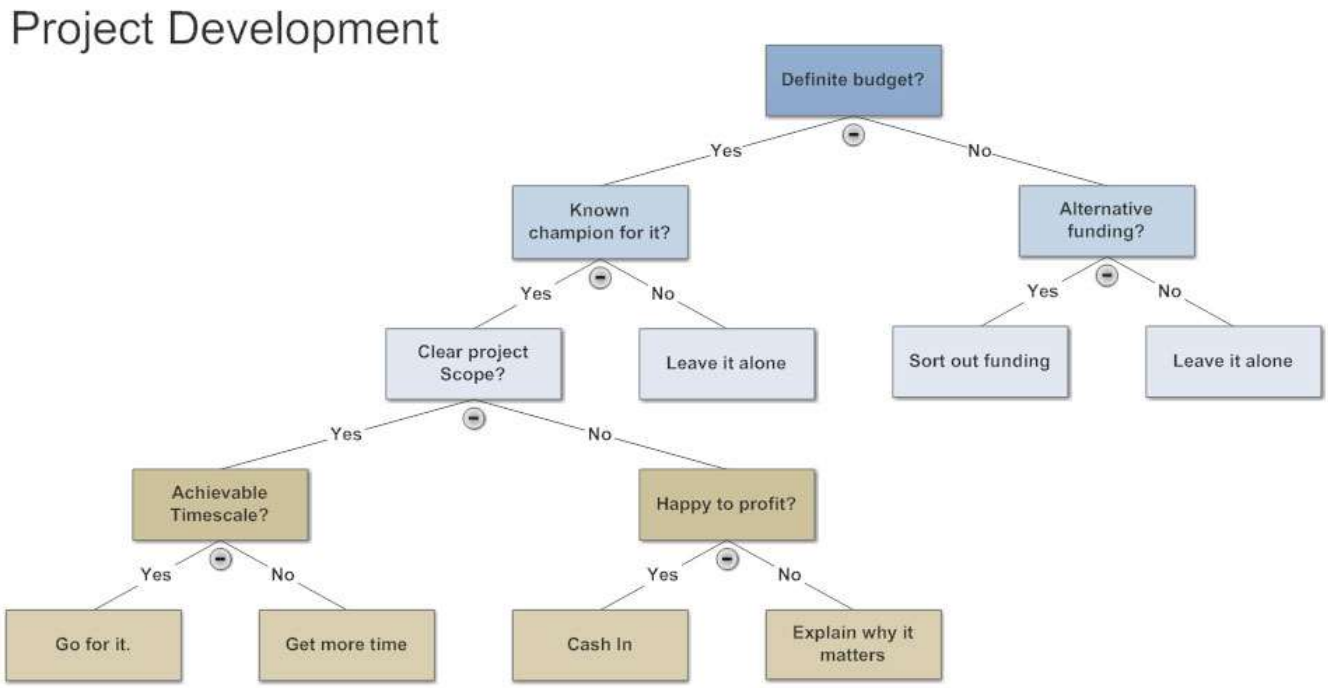
- It aids in the identification and analysis of the role and significance of the different factors that influence a decision
- It aids in the selection of the most ideal course of action based on the information available to the decision maker
- It offers a structured, orderly, and visible analysis of the issues considered in a decision to allow deliberation in an attentive and intelligible manner
- It aids highlighting the probable significance of making diverse choices and can assist the business in selecting the right solution option.
- The T-chart technique can be applied to a variety of issues, but its effectiveness depends on the difficulty of the situation and the amount of information that has been collected.

12.3 Decision Tree

Decision tree: A decision tree is a graph or model that contemplates each option and its outcomes. This technique also conducts statistical analyses.

A decision tree is a flowchart-like diagram that shows the various outcomes from a series of decisions. It can be used as a decision-making tool, for research analysis, or for planning strategy. A primary advantage for using a decision tree is that it is easy to follow and understand

Decision trees have three main parts: a root node, leaf nodes and branches. The root node is the starting point of the tree, and both root and leaf nodes contain questions or criteria to be answered. Branches are arrows connecting nodes, showing the flow from question to answer. Each node typically has two or more nodes extending from it. For example, if the question in the first node requires a "yes" or "no" answer, there will be one leaf node for a "yes" response, and another node for "no."



12.4 Multivoting

Multiple voices: Multivoting is used when multiple people are involved in making a decision. It helps whittle down an extensive list of options to a smaller group until the final decision is revealed.

Tools for Team Making Decisions

• Multivoting - Reduces long lists of ideas > Identifies important items

• Nominal Group Technique - Generates ideas > Prioritizes items

What is Multivoting?

Multivoting is a group decision-making technique used to reduce a long list of items to a manageable number by means of a structured series of votes. The result is a short list identifying what is important to the team.

When should a team use Multivoting? Use Multivoting whenever a Brainstorming session has generated a list of items that is too extensive for all items to be addressed at once. Because Multivoting provides a quick and easy way for a team to identify the most popular or highest priority items on a list—those that are worthy of immediate attention—this tool can be helpful when you need to

- Reduce a large list of items to a workable number quickly, with limited discussion and little difficulty.
- Prioritize a large list without creating a situation in which there are winners and losers in the group that generated the list.
- Identify the important or popular items on a large list.

Flow Chart

A flowchart is a picture of the separate steps of a process in sequential order. It is a generic tool that can be adapted for a wide variety of purposes, and can be used to describe various processes, such as a manufacturing process, an administrative or service process, or a project plan..

12.5 Pareto Analysis

Pareto analysis: A Pareto analysis technique is useful when many decisions need to be made. This **helps prioritize** which ones should be made first by determining which decisions will have the most significant impact. **Joseph Juran**, a Romanian-American business theorist, discovered Pareto's research in 1937

The Pareto analysis, also known as **the 80/20 rule**, is useful when many decisions need to be made.

- A Pareto analysis is a tool to help business leaders improve their companies by identifying key problems and opportunities.
- The technique is named after Italian economist **Vilfredo Pareto.**

- There are many different ways to conduct a Pareto analysis, but they tend to revolve around the same guiding principles.
- This article is for business leaders looking to understand where root problems are and how to improve the business as a whole.
- Those in charge always have many decisions to make. The question is, which should be tackled first? Many business leaders conduct a Pareto analysis to answer that question. The Pareto analysis helps prioritize decisions by which ones will have the greatest influence on overall business goals and which ones will have the least impact.
- The Pareto analysis, or Pareto principle, is also known as the 80/20 rule because it is based on the idea that 80% of a project's benefit can come from doing 20% of the work. Conversely, 80% of a situation's problems can be traced to 20% of the causes.

The technique is named after Italian economist Vilfredo Pareto, who observed in 1895 that **80% of Italy's wealth belonged to only 20% of the population**, according to Resume Lab.

While the Pareto principle is primarily used in business contexts, it exists in others. Resume Lab offers examples of the Pareto principle in the era of the COVID-19 pandemic, marketing and business, time management, computing, and online dating.

These are some business and marketing examples:

- 80% of complaints come from 20% of customers.
- 80% of profits come from 20% of the company's effort.
- 80% of sales come from 20% of products or services.
- 80% of sales are made by 20% of sellers.
- 80% of clients come from 20% of marketing activities.

The benefits of using a Pareto analysis

Here are some of the top benefits of using a Pareto analysis:

- **It increases organizational efficiency.** The Pareto analysis allows you to shift your company's focus, prioritize your problems, and identify the root causes of those problems. Companies are more efficient when they focus efforts in the places where they will see the greatest ROI.
- **It enhances problem-solving skills**. The Pareto analysis lets you organize work-related problems into a clear set of causes and effects, which you can then address individually.

- **It improves decision-making.** Employees and businesses can use a Pareto analysis to decide which practices are most effective and how to improve current operations. Learn how benchmarking can help improve operations.
- **It improves time and change management.** You can use the Pareto analysis to look deeper into the effectiveness of any changes you make or need to make in order to improve your business practices. This helps you manage these changes and any time you spend implementing them.
- **It helps in planning, analysis and troubleshooting.** You can use the Pareto analysis for planning and troubleshooting any changes you will make to your business practices.
- **It shows the cumulative impact of issues on business**. Because the Pareto analysis is versatile and applicable to multiple areas of business, it provides a look at the overall impact of challenges across the entire organization. This helps you and your company's other decision-makers identify which problems to resolve first.

There are several ways to conduct a Pareto analysis, and they all revolve around the same guiding principles. According to the website Mind Tools, these are the six steps to conduct a Pareto analysis:

- **Identify and list the problems.** Write a list of all the problems you need to resolve.
- **Identify the root causes.** Determine the fundamental cause of each problem.
- **Score the problems**. The scoring method used will depend on the type of problem. If the problem revolves around improving profits, then the scoring might center on how much each problem is costing your business. If you are trying to boost customer satisfaction, you might score the problems on the number of complaints that would be eliminated if the problem were solved.
- **Group the problems**. Organize the problems by root cause.
- **Tally the scores**. Add up the scores for each cause group. The group with the top score should be the highest priority, while the one with the lowest score should be the lowest priority.
- **Take action.** Start tackling the causes of the problems. Deal with the top-priority problem or group of problems first.

12.6 C:B Analysis

Cost-benefit analysis: This technique is used when weighing the financial ramifications of each possible alternative to determine what makes the most sense from an economic perspective.

Jules Dupuit, a French engineer and economist, introduced the concepts behind CBA in the 1840s. It became popular in the 1950s as a simple way of weighing up project costs and benefits, to determine whether to go ahead with a project.

As its name suggests, Cost-Benefit Analysis involves adding up the benefits of a course of action, and then comparing these with the costs associated with it.

The results of the analysis are often expressed as a payback period – this is the time it takes for benefits to repay costs. Many people who use it look for payback in less than a specific period – for example, three years.

- You can use the technique in a wide variety of situations. For example, when you are:
- Deciding whether to hire new team members.
- Evaluating a new project or change initiative.
- Determining the feasibility of a capital purchase.

However, bear in mind that it is best for making quick and simple financial decisions. More robust approaches are commonly used for more complex, business-critical or high cost decisions.

Brainstorm Costs and Benefits
Assign a Monetary Value to the Costs
Assign a Monetary Value to the Benefits
Compare Costs and Benefits

12.7 Conjoint (Trade off) Analysis

Conjoint analysis: A conjoint analysis is a method business leaders use to determine consumer preferences. It is multivariate research analysis

- Conjoint analysis is a form of **statistical analysis** that firms use in market research to understand **how customers value different components or features/attributes of their products or services**. It's based on the principle that any product can be broken down into a set of attributes that ultimately impact users' perceived value of an item or service.
- Conjoint analysis is typically conducted via a specialized survey that asks consumers to rank the importance of the specific features in question. Analyzing the results allows the firm to then assign a value to each one.

Types of Conjoint Analysis

- Conjoint analysis can take various forms. Some of the most common include:
- **Choice-Based Conjoint (CBC) Analysis:** This is one of the most common forms of conjoint analysis and is used to identify how a respondent values combinations of features. Used to determine Price in respect to attributes

- **Adaptive Conjoint Analysis (ACA):** This form of analysis customizes each respondent's survey experience based on their answers to early questions. It's often leveraged in studies where several features or attributes are being evaluated to streamline the process and extract the most valuable insights from each respondent.
- **Full-Profile Conjoint Analysis**: This form of analysis presents the respondent with a series of full product descriptions and asks them to select the one they'd be most inclined to buy.
- **MaxDiff Conjoint Analysis**: This form of analysis presents multiple options to the respondent, which they're asked to organize on a scale of "best" to "worst" (or "most likely to buy" to "least likely to buy").

The type of conjoint analysis a company uses is determined by the goals driving its analysis (i.e., what does it hope to learn?) and, potentially, the type of product or service being evaluated. It's possible to combine multiple conjoint analysis types into "hybrid models" to take advantage of the benefits of each.

WHAT IS CONJOINT ANALYSIS USED FOR?

The insights a company gleans from conjoint analysis of its product features can be leveraged in several ways. Most often, conjoint analysis impacts pricing strategy, sales and marketing efforts, and research and development plans.

Attribute trade off

12.8 SWOT Analysis

- SWOT analysis: A SWOT analysis assesses strengths, weaknesses, opportunities and threats – exactly what this planning tool stands for.
- A SWOT analysis is a compilation of your company's strengths, weaknesses, opportunities and threats.

- The primary objective of a SWOT analysis is to help organizations develop a full awareness of all the factors involved in making a business decision.
- Perform a SWOT analysis before you commit to any sort of company action, whether you are exploring new initiatives, revamping internal policies, considering opportunities to pivot or altering a plan midway through its execution.
- Use your SWOT analysis to discover recommendations and strategies, with a focus on leveraging strengths and opportunities to overcome weaknesses and threats.
- To run a successful business, you should regularly analyze your processes to ensure you are operating as efficiently as possible. While there are numerous ways to assess your company, one of the most effective methods is to conduct a SWOT analysis.
- A SWOT (strengths, weaknesses, opportunities and threats) analysis is a planning process that helps your company overcome challenges and determine what new leads to pursue.

Internal factors

Strengths (S) and weaknesses (W) refer to internal factors, which are the resources and experience readily available to you.

- These are some commonly considered internal factors:
- Financial resources (funding, sources of income and investment opportunities)
- Physical resources (location, facilities and equipment)
- Human resources (employees, volunteers and target audiences)
- Access to natural resources, trademarks, patents and copyrights

Current processes (employee programs, department hierarchies and software systems – like CRM Software and Accounting Software)

External factors

External forces influence and affect every company, organization and individual. Whether these factors are connected directly or indirectly to an opportunity (O) or threat (T), it is important to note and document each one.

External factors are typically things you or your company do not control, such as the following:

- Market trends (new products, technology advancements and shifts in audience needs)
- Economic trends (local, national and international financial trends)
- Funding (donations, legislature and other sources)
- Demographics

- Relationships with suppliers and partners
- Political, environmental and economic regulations

12.9 PEST Analysis

PEST analysis: An acronym for "political, economic, social and technological," a PEST analysis can improve decision-making and timing by analyzing external factors. This method considers present trends to help predict future ones.

Political	Economic	Social	Technological
Employment regulations	Credit	Diversity, inclusion and equality	Artificial intelligence (AI)
Environment	Cost of living	Attitude	Automation and robotics
Government policy	Economic cost	Trends & Fashion	Cybersecurity and data protection
Intellectual property protection	Economic growth	Division of wealth	Disruptive technologies
Property rights	Globlization	Education	Innovation
Tariff	Exchange Rate	Population	Tech Hubs
	Inflation & Tax	Social Mobility	

13 Some Terms from Leadership & Motivation in Management

Delegation is defined as the transfer to a competent individual, of the authority to perform a specific task in a specified situation.

Accountability is the principle that individuals and organisations are responsible for their actions and may be required to explain them to others.

ACCOUNTABILITY	RESPONSIBILITY
The duty to ensure a task is completed	The obligation to complete a task
Assigned to just one person	Can be shared among a team
Results-focused	Task-focused
Cannot be delegated	Can be delegated

Unity of command - is a classic principle of management that is used in many hierarchical organizations, such as the military, government agencies, and corporations. Unity of command holds that an employee should only be answerable to one person

Unity of Direction - Means that the there should be complete identify between individual and organizational goals on one hand and between departmental goals on the other i.e. one head & one plan for a group of acts having the same objective.

Scalar chain is a chain of all supervisors from the top management to the person working in the lowest rank. Description: A clear line of communication is very important for any organisation to achieve its objectives. The communication has to flow in an order for it to be effective. Scale chain identifies that path.

POSDCORB

1.Planning
This essentially refers to establishing a broad sketch of the work to be completed and the procedures incorporated to implement them. Planning is the first and most important step in POSDCORB as it sets the overall structure of the process with activities and timelines.

2.Organizing
Organizing involves formally classifying, defining and synchronizing the various sub-processes or subdivisions of the work to be done. It makes sure that the activities and timelines in the first step of planning are refined and organized further so that right people can be staffed to execute these tasks.

3.Staffing
This involves recruiting and selecting the right candidates for the job and facilitating their orientation and training while maintaining a favorable work environment.

4.Directing
This entails decision making and delegating structured instructions and orders to execute them.Directing is an important step in the POSDCORB cycle as it makes thing happen by giving clear objectives to teams and individuals.

5.Coordinating
This basically refers to orchestrating and interlinking the various components of the work.

6.Reporting
Reporting involves regularly updating the superior about the progress or the work related activities. The information dissemination can be through records or inspection.

7.Budgeting
Budgeting involves all the activities that under Auditing, Accounting, Fiscal Planning and Control.