**Muhammad Ali Khan**
**16550**
**Course: Information system and data processing**
**Program: BS (SE)**
**Instructor: Muhammad Abrar Khan**
**Examination: Final paper**

### Q.1
### What are systems? Explain in detail. Take a daily life example of system (any organization or company) and explain its component one by one in detail.

**Answer:**

**Systems**: A set of detailed methods, procedures and routines created to carry out a specific activity, perform a duty, or solve a problem.
**OR**
An organized, purposeful structure that consists of interrelated and interdependent elements (components, entities, factors, members, parts etc.). These elements continually influence one another (directly or indirectly) to maintain their activity and the existence of the system, in order to achieve the goal of the system.

**Explanation:**
All systems have inputs, outputs and feedback mechanisms, maintain an internal steady-state (called homeostasis) despite a changing external environment, display properties that are different than the whole (called emergent properties) but are not possessed by any of the individual elements, and have boundaries that are usually defined by the system observer. Systems underlie every phenomenon and all are part of a larger system. Systems stop functioning when an element is removed or changed significantly. Together, they allow understanding and interpretation of the universe as a meta-system of interlinked wholes, and organize our thoughts about the world.
Although different types of systems (from a cell to the human body, soap bubbles to galaxies, ant colonies to nations) look very different on the surface, they have remarkable similarities. At the most basic level, systems Types:

(1) **Closedsystems**: Theoretical systems that do not interact with the environment and are not influenced by its surroundings. Only the components within the system are significant.

**Example:** a sealed jar--nothing enters or exits the jar, but whatever is inside can interact.

(2) **Opensystems:** Real-world systems whose boundaries allow exchanges of energy, material and information with the larger external environment or system in which they exist.

**Example2:** a company--even if there are separate departments in one organization, the workers share data and interact with each other on a daily basis. Different systems methodologies (such as systems dynamics and systems thinking) classify systems differently.

**Closed-loop systems:**
Closed-loop systems add some type of feedback that allows the control system to make changes to its processes. The input, feedback, and output are constantly monitored and compared. The output is updated, often at defined a periodic rate. The amplification phase essentially runs over and over again to produce a constantly changing output.

Two very common examples of closed loop systems people use frequently are temperature control systems (house thermostat) and cruise control systems (in vehicles). Both rely on feedback and a closed-loop system to make automatic adjustments without input from a user, other than creating a set point.

**Example 1:**
When the temperature of a room changes, the actual temperature is fed back into the closed-loop system and compared to the set point temperature and the controller then controls the mechanisms and processes that manage the output (hot or cold air generation and flow).

**Example2:**
Similarly, in a vehicle cruise control system, the feedback input is the actual velocity of the vehicle. After comparison to the desired set point velocity, amplification controls the rate of change in velocity command (acceleration) to make the vehicle travel smoothly and consistently at the set point speed.

**Open Loop System:** In an open-loop system, topology is similar to the typical control system (as described above – input, amplification, output); an input starts the system resulting in a desired output. Once the task is started, the task typically continues to run until completion. It is a one-way system that has no feedback to alter the machine's operation.

**Example:** example of this type of system is a timer-based toaster. Bread is put into the toaster, a timer is set, and a lever is pushed down acting as a switch to start the process. The toaster coils heat and stay heated for the time set on the timer, then the toast pops up, coils turn off, and the process ends.

**. Take a daily life example of system (any organization or company) and its component one by one in detail:**

Following are the main components of any system
- input element
- Process
- output elements
- control mechanism
- feedback system
- Objectives

**(1) Input elements of purchase system:-**
The information entered into a system the input elements of purchase system include Orders for the purchase of various materials that someone wants to purchase it. For example purchasing a mobile from any online selling website.

(3) **Process/processing of purchase system:-**
Processing include all the detail that how you can receive your purchasing mobile from the online website you purchase such that Status of deliveries received against specific orders. Any specific treatment defined in the system to be performed on the data entered into the system, for instance, computation, analysis, application of any product for purchasing.

(4) **Output elements of purchase system:-**
the output elements is the changes that you wants in the delivery of the things that you have purchase as change in order quantity, changing the time , changing the day or some other information that you wants to change in the system. And the given by the system after the process has been performed on the data being input to the system.

(5) **control mechanism of purchase system**:-
control mechanism of a system describe the inspection in the quality that the quality is good or bad that you have purchase. And also control mechanism of the system includes the communication among the seller and the purchaser about the quality inspection of the purchase product. This comparison of actual with expected output is done with the help of control mechanism.

(6) **feedback system purchase system:-**
The feedback is very important for any system and also for selling and purchase system because in the result of feedback the purchasing product status can easily update. And after the control mechanism has been devised, it needs to a reporting mechanism, which should respond with a corrective action, if required.

**(6) Objectives of purchase system:-**
The main objectives of a system is Ensuring that what you buy has high value for the company is a key purchasing function, buy what constitutes value depends on your strategic business goals.
 For example improving in quality of the product etc.

**Home security system:**

A home security system consists of different components, including motion sensors, indoor and outdoor cameras, glass break detectors, door and window sensors, yard signs and window stickers, smoke detectors, and carbon monoxide detectors. These alarm system components work together to keep you and your family safe from a variety of threats.

Whether you just want to learn more about security system parts or are considering going the DIY route, here are the major security system components you should be aware of.

**Motion Sensors**

Motion sensors are an essential part of any home security system. They have a wide variety of uses: turning on indoor and outdoor lights, activating cameras, setting off alarms, and more. For this reason, they are often incorporated into other home alarm system equipment.

**Indoor and Outdoor Cameras**

Security cameras are another core security system part. Cameras can be used to record areas of your home or yard, and some can also send the feed straight to your smartphone or tablet.

Cameras are also used in new and clever ways, from doorbell cameras that are all but invisible to smart cameras, like the Nest Cam, that record in crisp 1080p HD and automatically store footage in the Cloud for safekeeping.



**Glass Break Detectors**

Glass break detectors are handy sensors that detect the frequency the sound of shattering glass makes and set off an alarm. These are useful to let you know if someone attempts to enter your home by breaking the windows or glass doors, making them an essential alarm system component. Typically, these small sensors are placed indoors near windows or other glass you're concerned about someone breaking. They tend to be inexpensive, so they make great, simple investments to boost security.

**Door and Window Sensors**

Door and window sensors detect when the door or window they are attached to opens. These devices use two sensors: one on the door or window, and one on the frame. When the door is closed, the two sensors form a closed circuit. When the door is opened, the circuit breaks, triggering a burglar alarm or text alert. This is an older technology, but it's one that works. And like glass break detectors, they tend to be inexpensive, making great first investments in home security.



**Yard Signs and Window Stickers**

One burglar alarm part that might be easily overlooked is the signage that comes with it. You might not think these are all that important, but the presence of these signs and window

stickers can deter would-be burglars from entering a home. Make sure to display your signs prominently!



Smoke Detectors

Most homes have smoke detectors installed, but if you need to install your own, you can get one as part of a comprehensive home security system. If you're looking to upgrade, there are also smart smoke detectors that speak alerts out loud, letting you know what room the smoke is coming from.



Carbon Monoxide Detectors

Carbon monoxide (CO) detectors are less common than smoke detectors, but they are just as important. Carbon monoxide is odorless, tasteless, and colorless. Without a detector, there is no

way to know this gas is present. This can be extremely dangerous—thousands of people go to the hospital each year from CO poisoning in their homes.

This covers the basics of a security system. If you're considering purchasing a system for your home, check out our picks for the best home security systems.



**Q.2**

> **What is Management information system? Take an example of MIS of any organization and elaborate in your own words.**

**Answer:** A management information system (MIS) is a computer system consisting of hardware and software that serves as the backbone of an organization's operations. An MIS gathers data from multiple online systems, analyzes the information, and reports data to aid in management decision-making.

MIS is also the study of how such systems work.

It is an information system which deals with the
- Planning, development and maintenance of production facilities
- Establishment of Production goals
- Availability of production materials
- Scheduling

**Improved Decision-Making**

The purpose of an MIS is improved decision-making, by providing up-to-date, accurate data on a variety of organizational assets, including:

- **Financials**
- **Inventory**
- **Personnel**
- **Project timelines**
- **Manufacturing**
- **Real estate**
- **Marketing**
- **Raw materials**

**Example of MIS of any organization**

**BMW's Management Information Systems: Company**

**Overview**

BMW is a German vehicle and engine producing organization established in 1916. It also manages and creates the MINI brand, and is the mother organization of Rolls-Royce Motor Cars. Mainly, BMW Group Brands are MINI, BMW and Rolls-Royce (BMW Education Programme 2009a). BMW is famous for its efficient and durable cars. And its mission statement is being a leader in the world as premium product provider and also premium service provider (BMW Education Programme, 2009b).

**Overview of MIS of BMW**

The present automotive industry is classified by increasing product diversity and brief development periods. One of the important activities is to enter the market quicker by organizing the product development and production start-up procedures. One can attain this streamlining by doing a huge number of effectively coordinated procedures in parallel, utilizing a data structure that has all the data regarding the product and its types and is available at each phase to all people included in production planning (Clarke, 2007). This process, pertained to as integrated product and process engineering, is at available when one utilizes my SAP Automotive.

my SAP Automotive integrates SAP Business Suite programs with customized operations to aid BMW- as well as other manufacturers, vendors, sales, and service companies – attain substantial benefits by merging the whole engineering, production, marketing and service business sector.

With my SAP Automotive merged within the operations of BMW, the company is able to improve important business procedures – and attain important company objectives:

* Competent staff and talent with effective procedures for workforce and talent acquisition

* Financial stability with improved procedures for financial performance control

* Operational effectiveness with improved procedures for operations control

* Product and service dominance with improved procedures for product control

* Excellent client value with improved procedures for sales and service

my SAP Automotive is particularly created to address the needs and challenges of the BMW and the automotive industry. It is a comprehensive and effective solution for BMW that encompasses business procedures from engineering design, preparation, manufacturing, purchasing, sales and service (SAP for Automotive Website, 2010). Created to be a comprehensive and holistic management information system, my SAP Automotive is organized based on various market sectors that create the foundations of automotive industry.

**Roles of mySAP Automotive in BMW**

**Provide information across various departments**

**a) Operations**

More than any operational aspect, operations of BMW have been affected by significant developments in technology. As a consequence, production processes have evolved. For example, inventories are given just in time in order that huge sums of funds are not used for storing large inventories (Kiley, 2004).

my SAP Automotive offers solutions for BMW in terms of vehicle and procedure modeling, preparation and manufacturing implementation. mySAP Automotive helps BMW ins terms of the improvement of the planning of the manufacturing process.

Consolidated product and process modeling is attained within BMW through mySAP Automotive, where the modeling of every vehicular model and production procedures from the initial prototyping stage to the manufacturing stage is accomplished in one framework (Kidd, 2000). This minimizes information redundancy and the necessity for interfaces as information is saved in a solitary system. Cooperative engineering with suppliers provides new opportunities for more effective and quicker product development with suppliers online.

Versatility and effectiveness in manufacturing within BMW is attained through the Model-mix preparation and immediate needs preparation feature of mySAP Automotive. Model-mix preparation enables BMW to improve the manufacturing sequence particularly essential for the company. Immediate needs preparation allows quicker processing of assembly and parts requirements of make-to-order setting as against the basic MRP.

### b) Accounting

In BMW, all accounting documents are managed by all accounting managers (Laudon, 2007). In this case, mySAP Automotive offers solutions that improve the accounting procedures and policies of BMW. mySAP Automotive offers solutions that improve the accounting activities of the company, enabling them to respond more quickly and effectively to the industry demands.

### c) Finance

mySAP Automotive offers financial data to all financial managers within BMW including the head of the finance department. The head of the finance department of BMW studies historical and present financial outputs, predicts long term financial necessities, and tracks and manages the usage of money over time utilizing the data produced by the mySAP Automotive (Buxmann, 2004).

mySAP Automotive offers solutions that allow sales and pricing of cars through configuration, status monitoring of cars, sales and allocation of available components. Car customization and pricing online improved car sales of BMW by providing clients with the alternative of customizing their cars (Seese, 2008). Once the car is customized, car customization and pricing will identify the price of the car according to the customization. Car search and locator allows BMW to look and find cars that satisfy the particular configurations, attaining quicker delivery to clients.

### d) Marketing

mySAP Automotive aids the marketing initiatives of BMW in the aspect of product development, dissemination, pricing choices, advertising, and sales prediction (Forquer, 2005). More than any other operational aspect, mySAP Automotive depends on outer sources of information. These references include rivalry and clients, for instance.

### e) Human Resource

mySAP Automotive also helps with BMW's initiatives connected to employees, leaders, and other staff working within the company. Due to the fact that the role of the human resources is important to all other aspects of the operations of BMW, mySAP Automotive has an important responsibility in guaranteeing company development for BMW (Sankar, 2006).

### 2) Facilitate decision making at the three tiers of management

### a) Operational Level Systems
To make the operational level decision making within BMW very simple and effective, mySAP Automotive helps in offering and disseminating updated data to proper users. mySAP Automotive is created to improve the reporting of data that will be critical in the correct decision

making within the operational level of BMW. mySAP Automotive is able to immediately gather and edit information, summarize outcomes, and able to cope and correct mistakes immediately.

## b) Management Level Systems
mySAP Automotive has automated and manual internal controls that help in the management level decision making activities in BMW (Kogent, 2009). Data is obtained through proper editing and inner control checks. A detailed inner and outer audit program is used within BMW through mySAP Automotive.

## c) Strategic Level Systems
To have an improved strategic level decision making, information within BMW is analyzed and organized effectively and uniformly through mySAP Automotive. Gaps in the manner data is gathered and documented can alter data and trend analysis. Aside from this, since information gathering and documentation procedures will alter over time, so BMW management has created effective processes to enable systems developments through mySAP Automotive. These processes are always well defined and noted, effectively communicated to proper workers and has a monitoring system that aids in the strategic level decision making of BMW.

**Q.3**

Explain Marketing Information system and its types in detail.
Note: You should make your answer understandable by taking a proper example.

**Definition**: The **Marketing Information System** refers to the systematic collection, analysis, interpretation, storage and dissemination of the market information, from both the internal and external sources, to the marketers on a regular, continuous basis.

The marketing information system distributes the relevant information to the marketers who can make the efficient decisions related to the marketing operations viz. Pricing, packaging, new product development, distribution, media, promotion, etc.

Every marketing operation works in unison with the conditions prevailing both inside and outside the organization, and, therefore, there are several sources ( viz. Internal, Marketing Intelligence, Marketing Research) through which the relevant information about the market can be obtained.

1.  **Internal Records:** The Company can collect information through its internal records comprising of sales data, customer database, product database, financial data, operations data, etc. The detailed explanation of the internal sources of data is given below:

    ▪  The information can be collected from the documents such as invoices, transmit copies, billing documents prepared by the firms once they receive the order for the goods and services from the customers, dealers or the sales representatives.

    ▪  The current sales data should be maintained on a regular basis that serves as an aide to a the Marketing Information System. The reports on current sales and the inventory levels help the management to decide on its objectives, and the marketers can make use of this information to design their future sales strategy.

    ▪  The Companies maintain several databases such as*Customer Database- wherein the complete information about the customer's name, address, phone number, the frequency of purchase, financial position, etc. is saved.

    *Product Database- wherein the complete information about the product's price, features, variants, is stored.

    *Salesperson database, wherein the complete information about the salesperson, his name, address, phone number, sales target, etc. is saved.

    ▪  The companies store their data in the data warehouse from where the data can be retrieved anytime the need arises. Once the data is stored, the statistical experts mine it by applying several computer software and techniques to convert it into meaningful information that gives facts and figures.

2.  **Marketing Intelligence System:** The marketing intelligence system provides the data about the happenings in the market, i.e. data related to the marketing environment which is external to the organization. It includes the information about the changing market trends, competitor's pricing strategy, change in the customer's tastes and preferences, new products launched in the market, promotion strategy of the competitor, etc.

    In order to have an efficient marketing Information System, the companies should work aggressively to improve the marketing intelligence system by taking the following steps:

    ▪  Providing the proper training and motivating the sales force to keep a check on the market trends, i.e. the change in the tastes and preferences of customers and give suggestions on the improvements, if any.

- Motivating the channel partners viz. Dealer, distributors, retailers who are in the actual market to provide the relevant and necessary information about the customers and the competitors.

- The companies can also improve their marketing intelligence system by getting more and more information about the competitors. This can be done either by purchasing the competitor's product, attending the trade shows, reading the competitor's published articles in magazines, journals, financial reports.

- The companies can have an efficient marketing information system by involving the loyal customers in the customer advisory panel who can share their experiences and give advice to the new potential customers.

- The companies can make use of the government data to improve its marketing Information system. The data can be related to the population trends, demographic characteristics, agricultural production, etc. that help an organization to plan its marketing operations accordingly.

- Also, the companies can purchase the information about the marketing environment from the research companies who carry out the researches on all the players in the market.

- The Marketing Intelligence system can be further improved by asking the customers directly about their experience with the product or service via feedback forms that can be filled online.

3. **Marketing Research**: The Marketing Research is the systematic collection, organization, analysis and interpretation of the primary or the secondary data to find out the solutions to the marketing problems. Several Companies conduct marketing research to analyze the marketing environment comprising of changes in the customer's tastes and preferences, competitor's strategies, the scope of new product launch, etc. by applying several statistical tools. In order to conduct the market research, the data is to be collected that can be either primary data (the first-hand data) or the secondary data (second-hand data, available in books, magazines, research reports, journals, etc.)

The secondary data are publicly available, but the primary data is to be collected by the researcher through certain methods such as questionnaires, personal interviews, surveys, seminars, etc.

A marketing research contributes a lot in the marketing information system as it provides the factual data that has been tested several times by the researchers.
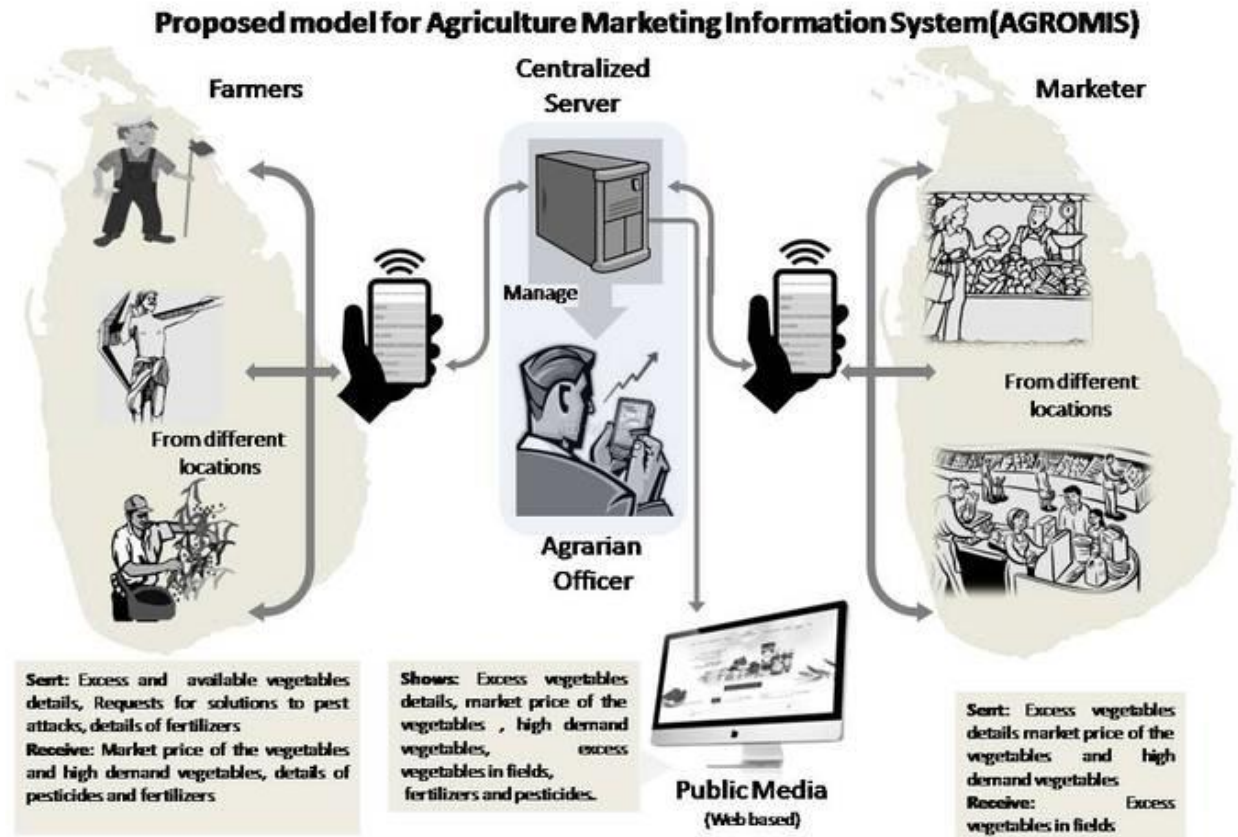
4. **Marketing Decision Support System**: It includes several software programs that can be used by the marketers to analyze the data, collected so far, to take better marketing decisions. With the use of computers, the marking managers can save the huge data in a tabular form and can apply statistical programs to analyze the data and make the decisions in line with the findings.

Thus, the marketers need to keep a check on the marketing environment, i.e. both the internal (within the organization) and the external (outside the organization, so that marketing policies, procedures, strategies can be designed accordingly.

Example

Proposed model for Agriculture Marketing Information system/

- Data collected from farmers from different locations.

- Transferred to centralized server to Agrarian officer.

- Sended to media and media and marketer than data is processed.

## Proposed model for Agriculture Marketing Information System (AGROMIS)

**Farmers**

**Centralized Server**

**Marketer**

Manage

From different locations

From different locations

**Agrarian Officer**

**Public Media**
(Web based)

**Sent:** Excess and available vegetables details, Requests for solutions to pest attacks, details of fertilizers
**Receive:** Market price of the vegetables and high demand vegetables, details of pesticides and fertilizers

**Shows:** Excess vegetables details, market price of the vegetables , high demand vegetables, excess vegetables in fields, fertilizers and pesticides.

**Sent:** Excess vegetables details market price of the vegetables and high demand vegetables
**Receive:** Excess vegetables in fields

**Example of an MIS**: A marketing information system supports the decision-making process in marketing.

Jobber (2007) defines it as a "system in which marketing data is formally gathered, stored, analyzed and distributed to managers in accordance with their informational needs on a regular basis."

---

### Q.4

Why Decision Making is an important factor to run an organization. Explain your answer with the help of a proper example.

Management is essentially a bundle of decision-making process. The managers of an enterprise are responsible for making decisions and ascertaining that the decisions made are carried out in accordance with defined objectives or goals.

Decision-making plays a vital role in management. Decision-making is perhaps the most important component of a manager's activities. It plays the most important role in the planning process. When the managers plan, they decide on many matters as what goals their organisation will pursue, what resources they will use, and who will perform each required task.

When plans go wrong or out of track, the managers have to decide what to do to correct the deviation.

In fact, the whole planning process involves the managers constantly in a series of decision-making situations. The quality of managerial decisions largely affects the effectiveness of the plans made by them. In organising process, the manager is to decide upon the structure, division of work, nature of responsibility and relationships, the procedure of establishing such responsibility and relationship and so on.

In co-ordination, decision-making is essential for providing unity of action. In control, it will have to decide how the standard is to be laid down, how the deviations from the standard are to be rectified, how the principles are to be established how instructions are to be issued, and so on.

The ability to make good decisions is the key to successful managerial performance. The managers of most profit-seeking firms are always required to take a wide range of important decision in the areas of pricing, product choice, cost control, advertising, capital investments, dividend policy, personnel matters, etc. Similarly, the managers of non-profit seeking concerns and public enterprises also face the challenge of taking vital decisions on many important matters.

Decision-making is also a criterion to determine whether a person is in management or not. If he participates in decision-making, he is regarded as belonging to management staff. In the words of George Terry: "If there is one universal mark of a manager, it is decision-making."

**Types of Decision-Making Skills**

**Ethical decision-making skills**

Can you pick from tough choices while upholding ethics? A central skill for healthcare, the financial industry, and more.

**Consumer decision making process**

Understanding how consumers make decisions is key for marketing and sales specialists.

**Team decision-making skill**

Also called *group decision making* or *collaborative decision making.* Important in business and managerial jobs**.**

**Executive decision making.** The opposite of *group decision making.* Executives must gather input, then make difficult decisions on their own.

**Consensus decision making skills**

This rare team skill finds a solution *all* members can support. Valued in government and nonprofit jobs.

**Shared decision-making skills**

Similar to *team decision making,* but generally has a healthcare focus.

**Medical decision-making skills**

Crucial for doctors, nurses, and other healthcare professionals.

**Rational decision making**.

The rational model of decision-making is a necessary skill in managerial and business jobs.

**Data driven decision-making skills**

Are you adept at data collection and analysis? This is crucial in data-heavy fields like marketing or healthcare.

**Intuitive decision-making ability**

Can you go with your gut to make decisions? Valued in action-oriented fields like the military, firefighting, and police work.

**Evidence-based decision making**

The opposite of intuitive decision-making. Vital in the healthcare field.

**Programmed decision making**

Can you make policies and procedures? Good skill for high-level management jobs.

**Military decision making process**

The US Army uses this distinct seven-step plan to make operational decisions

**Such examples are as follow**

**Problem-solving.**

**Leadership.**

**Reasoning.**

**Intuition.**

**Teamwork.**

**Emotional Intelligence.**

**Creativity.**

**Time management.**

**Proper example1**

when choosing a place to establish a new business, the criteria might include rental costs, availability of skilled labor, access to transportation and means of distribution, and proximity to customers. Based on the relative importance of these factors, a business owner makes a decision that best meets the criteria.

**Example2**

An outfit store maintains readymade garments and stitched clothes for various classes of society. Due to fluctuating changes in fashion trends, pre-seasonal planning becomes critical.

- A Planning and forecasting software can be used by management to
- Measure customer reactions to re-pricing
- When to initiate clearance sales for old stock
- Deciding about discount percentages

When to order new stock for the season