

# Information Systems Past Paper 2021

Qno1.

Ans: Business Information System, eases the process of decision making and simplifies the process of delivering the required information and hence assists in taking better decisions instantly.

Business Information System can be effectively implemented to help communication better between the employers and the employees.

Following are the trends why information system is important today.

## 1. Store and Analyse Information

Most information systems function as delivery vehicles for data stored in databases. Databases support the operations and management aspects of a business. With a database, the collected data is stored and organised.

## 2. Simplify Business Processes

The integration of information systems in a business enables easier management of certain business processes so as to save on time and labour. For instance, buyers can have a seamless shopping experience at an online retailer as they can select a particular product display based on best-selling items, price range and customer ratings.

## 3. Facilitate Decision-Making

In terms of decision-making, information systems such as group decision support systems (GDSS), video conferencing and Internet-based networks assist in connecting business owners and stakeholders regardless of location. As a sub-category of information systems, management information systems (MIS) also aid in the decision-making process by providing relevant, accurate and complete information.

## 4. Access to Full Data Control

Companies can easily access a pool of data collected and control with full autonomy for business purposes. As information systems store a large amount of private data and facilitate thousands of business transactions on these data every day, a business must have a robust security system that secures the information systems against external threats.

Qno2 (a).

Ans: System: A set of elements or components that work together and interact to accomplish goals

For Example: A desktop publishing system is a computer running desktop publishing software.

### Characteristics of a system:

#### 1. **Organization:**

It implies structure and order. It is the arrangement of components that helps to achieve objectives.

#### 2. **Interaction:**

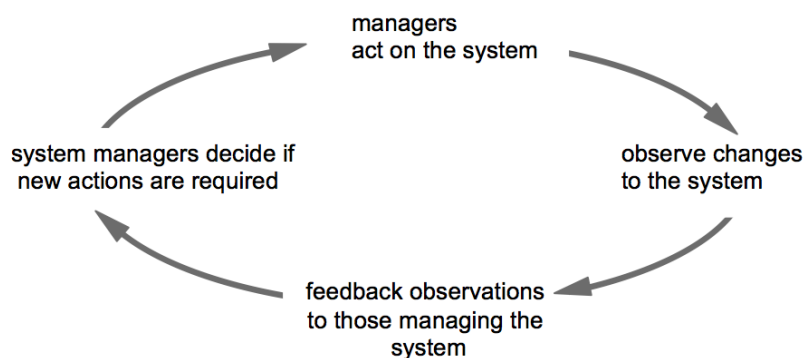
It refers to the manner in which each component functions with other components of the system.

### 3. **Interdependence:**

It means that parts of the organization or computer system depend on one another. They are coordinated and linked together according to a plan. One subsystem depends on the output of another subsystem for proper functioning.

# Feedback and control

**Feedback is a fundamental concept in systems thinking and essential for control. Inadequate feedback is often a cause of system failure.**



Feedback is a fundamental concept in systems thinking, and lack of appropriate feedback is often a cause of system failure.

The idea can be illustrated by a doctor treating a patient. After the first consultation, the doctor may prescribe a particular medicine. At the next session, the doctor asks if the patient feels better or is suffering any side effects. According to the feedback from the patient the doctor may continue with the same medicine or try something else.

Qno2 (b).

**Ans:** Business processes are important because they are a step by step guide that describes how things are done the best possible way and makes it easier to focus on improving business processes.

Business processes have a vital role to play in the efficient and effective functioning of the organisation and structure. Why business process is important? If a business process is well-planned and strategic, it will help in the following ways:

- **Reduced risk and expenditure:** A business process lays out the most efficient way to do a job, taking into account future shortcomings. This reduces risk and expense.
- **Reduced human error:** Tasks are given to people who are more capable, thereby reducing the risk of human error.
- **Improved efficiency:** Moves and relevant steps are clearly mapped out, which enhances productivity.
- **Collaboration** - Working together as a team in a process and optimising the way the business works.
- **Improved customer focus:** A business process continuously updates your company with information relating to the needs of the customer and reviews about the service or product they receive.
- **Effective communication:** Using market research and reviews, you can communicate much better with the customer.
- **Improved time management:** Certain activities can be done more efficiently thanks to the development of strategies and flowcharts.
- **Ability to adapt to new technology:** Business processes can be improved by taking advantage of the latest technologies.

Information technology enhances business processes in two main ways:

- Increasing efficiency of existing processes
  - Automating steps that were manual
- Enabling entirely new processes that are capable of transforming the businesses
  - Change flow of information
  - Replace sequential steps with parallel steps
  - Eliminate delays in decision making

Qno3.

Three primary types of business intelligence decisions:

Business intelligence supports the three types of decision-making mentioned above: strategic, tactical, and operational. Its frequency and organizational impact characterize each.

Strategic decisions

Strategic decisions comprise the highest level of organizational business decisions, are usually infrequent and made by the organization's executives. Yet, their impact is enormous and far-reaching.

Some types of strategic decisions include selecting a particular market to penetrate, a company to acquire, or whether to hire additional staff.

Decisions made at this level usually involve significant expenditure. However, they are generally non-repetitive in nature and are taken only after careful analysis and evaluation of many alternatives.

#### Tactical decisions

Tactical decisions occur with greater frequency (e.g., weekly or monthly) and fall into the mid-management level. Often, they relate to the implementation of strategic decisions.

Examples of tactical decisions include product price changes, work schedules, departmental reorganization, and similar activities.

The impact of these types of decisions is medium regarding risk to the organization and impact on profitability.

#### Operational decisions

Operational decisions usually happen frequently (e.g., daily or hourly), relate to day-to-day operations of the enterprise, and have a lesser impact on the organization. Operational decisions determine the day-to-day profitability of the business, how effectively it retains customers, or how well it manages risk.

Answering a sales inquiry, approving a quotation, or calculating employee bonuses may be examples of this decision type.

You can summarize these types of decisions in business intelligence this way:

- Strategic – Long-term, complex, made by senior managers;
- Tactical – Medium-term, less complex, made by mid-level managers;
- Operational – Day-to-day, simple, routine, made by junior managers.

#### Trends in Business Intelligence:

There are 10 types of trends in business intelligence.

##### 1) Artificial Intelligence

We will start our analysis of what is new in business intelligence with AI. This is a trend that is wildly being covered by Gartner in their latest Strategic Technology Trends report, combining AI with engineering and hyperautomation, and concentrating on the level of security in which AI risks developing vulnerable points of attacks.

Artificial intelligence (AI) is the science aiming to make machines execute what is usually done by complex human intelligence. Often seen as the highest foe-friend of the human race in movies (Skynet in Terminator, The Machines of Matrix, or the Master Control Program of Tron), AI is not yet on the verge to destroy us, in spite of the legit warnings of some reputed scientists and tech-entrepreneurs.

## 2) Data Security

Data and information security have been on everyone's lips in 2021, and they will continue to buzz the world in 2022. The implementation of privacy regulations such as the GDPR (General Data Protection Regulation) in the EU, the CCPA (California Consumer Privacy Act) in the USA, and the LGPD (General Personal Data Protection Law) in Brazil have set building blocks for data security and management of users' personal information.

Moreover, the recent overturn by the European Court of Justice of the legal framework called Data Privacy Shield hasn't made software companies' life much easier. The Shield was a legal framework that enabled companies to transfer data from the EU to the USA but, with recent legal developments causing the invalidation of the process, companies that have their headquarters in the US don't have the right to transfer any of the EU data subjects.

## 3) Data Discovery/Visualization

Data discovery has increased its impact in the last year. A survey conducted by the Business Application Research Center listed data discovery in the top 4 business intelligence trends by the importance hierarchy for 2022. BI practitioners steadily show that the empowerment of business users is a strong and consistent trend.

Essentially, data discovery is the process of collecting data from various internal and external sources and using advanced analytics and visualizations to consolidate all the information. This allows businesses to keep every relevant stakeholder engaged with the data by empowering them to analyze and manipulate the information in an intuitive way and extract actionable insights. To achieve this, businesses of all sizes turn to modern solutions such as business intelligence tools that offer data integration, interactive visualizations, a user-friendly interface, and the flexibility to work with big amounts of data in an efficient and intuitive way.

## 5) Predictive & Prescriptive Analytics Tools

Business analytics of tomorrow is focused on the future and tries to answer the questions: what will happen? How can we make it happen? Accordingly, predictive and prescriptive analytics are by far the most discussed business analytics trends among BI professionals, especially since big data is becoming the main focus of analytics processes that are being leveraged not just by big enterprises, but small and medium-sized businesses alike.

Predictive analytics is the practice of extracting information from existing data sets in order to forecast future probabilities. It's an extension of data mining that refers only to past data. Predictive analytics includes estimated future data and therefore always includes the possibility of errors from its definition, although those errors steadily

decrease as software that manages large volumes of data today becomes smarter and more efficient. Predictive analytics indicates what might happen in the future with an acceptable level of reliability, including a few alternative scenarios and risk assessment. Applied to business, predictive analytics is used to analyze current data and historical facts in order to better understand customers, products, and partners and to identify potential risks and opportunities for a company.

## 6) Real-time Data & Analytics

The need for real-time data has tremendously evolved this year and will continue to do so as one of the data analytics trends for 2022. We have seen since the pandemic arrived, that the needs for real-time and accurate updates are critical in developing proper strategies to respond to such unfortunate situations. Some countries have used data to make the best possible decisions, and companies followed to ensure survival in these uncertain times. Real-time access to data has become a norm in everyday life, not just for businesses, but the general public as well, where we could see press conferences filled with the most recent information, graphs, and statistics that have defined some of the strategies against the pandemic. But not only; creating ad hoc analysis has enabled businesses to stay on top of changes and adapt to immense challenges that this year has brought.

In business is similar: forecasting and alarms will inevitably become used much more in developing proper business responses and strategies for future endeavors with more variables brought into the equation. Moreover, implementing live dashboards will help companies to immediately access relevant information regarding their business and react if any potential issues arise. Up-to-date data is becoming more important than ever before, and since the world has changed, companies need to adapt as well. High gear for data access is becoming the norm and is one of the reasons why some companies can survive, and others not.

Trends in business analytics will certainly have real-time data as one of the main drivers in 2022 and we will, without a doubt, see more of it in action.

## 7) Collaborative Business Intelligence

Today, managers and workers need to interact differently as they face an always-more competitive environment. More and more, we see a new kind of business intelligence rising: the collaborative BI. It is a combination of collaboration tools, including social media and other 2.0 technologies, with online BI tools. This is developed in a context of enhanced collaboration addressing the new challenges the fast-track business provides, where more analyses are done and reports edited. When talking about collaborative BI, the term "self-service BI" quickly pops up in the sense that those self-service tools do not require an IT team to access, interpret, and understand all the data.

## 8) Data Literacy

As data becomes the foundation of strategic decisions for businesses of all sizes, the ability to understand this data and use it as a collaborative tool that everyone in the

organization can use becomes critical for success. That said, data literacy will be one of the relevant data analytics trends to look out for in 2022.

Data literacy is defined as the ability to understand, read, write, and communicate data in a specific context. This means understanding the techniques and methods used to analyze the data as well as the tools and technologies implemented.

According to Gartner, poor data literacy is listed as the second-biggest roadblock to the success of the CDO's office, and it adds that by 2023 data literacy will become essential in driving business value.

#### 9) Data Automation

Business intelligence topics wouldn't be complete without data (analysis) automation. In the last decade, we saw so much data produced, stored, and ready to process that companies and organizations were seriously looking for modern data automation solutions to tackle massive volumes of information that has been collected. A survey by KDNuggets predicts that in the next decade, data science tasks will be automated, hence, this is one of the trends in business intelligence that we need to keep an eye on since we don't know when it will exactly happen.

#### 10) Embedded Analytics

When data analytics occurs within a user's natural workflow, embedded analytics is the name of the game. Businesses have recognized the potential of embedding various BI components such as dashboards or reports into their own application and thus improving their decision-making processes and increasing productivity.

Formerly strangled by spreadsheets, companies have realized how utilizing embedded dashboards enables them to provide higher value within their own applications. In fact, according to Allied Market research, the embedded analytics market is projected to reach \$77.52 BN by 2026, with a CAGR of 13.6% from 2017, and this is one of the business analytics topics we will hear even more in 2022.

Whether you need to create a sales report or send multiple dashboards to clients, embedded analytics is becoming a standard in business operations, and in 2022, we will see even more companies adopting it. Departments and company owners are looking for professional solutions to present their data without the need to build their own software. By simply white labeling the chosen application, organizations can achieve a polished presentation and reporting which they can offer to consumers.

Qno5.

Ans: The main reason for organizations to use system integration is their need to improve productivity and quality of their operations.

The goal is to get the organizations various IT systems to "talk to each other" through the integration, to speed up information flows and reduce operational costs for the organization. But system integration is not used only to connect an organization's internal systems, but also third parties that the organization operates with.

## **Four Major Types of Systems**

1. Transaction Processing Systems (TPS)
2. Management Information Systems (MIS)
3. Decision-Support Systems (DSS)
4. Executive-Support Systems (ESS)

### **Transaction Processing Systems (TPS)**

- Basic business systems that serve the organization's operational level
- Input: Transactions, events
- Processing: Sorting, listing, merging, updating
- Output: Detailed reports, lists, summaries
- Users: Operations personnel, supervisors

### **Management Information Systems (MIS)**

- Serve management level; provide reports and access to company data
- Input: Summary transaction data, high-volume data, simple models
- Processing: Routine reports, simple models, low-level analysis
- Output: Summary and exception reports
- Users: Middle managers

### **Decision-Support Systems (DSS)**

- Serve management level with data analysis for making decisions
- Input: Low-volume data or massive databases, analytic models, and data analysis tools
- Processing: Interactive, simulations, analysis
- Output: Special reports, decision analyses, responses to queries
- Users: Professionals, staff managers

### **Executive Support Systems (ESS)**

- Provide communications and computing environment that serves the organization's strategic level
- Input: External and internal aggregate data
- Processing: Graphics, simulations, interactive
- Output: Projections, responses to queries
- Users: Senior Managers



Qno6.

Short Notes:

### 1. Decision Support System:

A decision support system (DSS) is an information system that aids a business in decision-making activities that require judgment, determination, and a sequence of actions. The information system assists the mid- and high-level management of an organization by analyzing huge volumes of unstructured data and accumulating information that can help to solve problems and help in decision-making. A DSS is either human-powered, automated, or a combination of both.

A decision support system produces detailed information reports by gathering and analyzing data. Hence, a DSS is different from a normal operations application, whose goal is to collect data and not analyze it.

In an organization, a DSS is used by the planning departments – such as the operations department – which collects data and creates a report that can be used by managers for decision-making. Mainly, a DSS is used in sales projection, for inventory and operations-related data, and to present information to customers in an easy-to-understand manner.

### 2. Essential of e-Commerce Processes

***E-commerce systems rely on the resources of the Internet, intranets, extranets, and other computer networks. Electronic commerce can include:***

- a. **Interactive marketing, ordering, payment, and customer support processes at e-commerce sites on the World Wide Web**
- b. **Extranet access of inventory databases by customers and suppliers**
- c. **Intranet access of customer relationship management systems by sales and customer service reps**
- d. **Customer collaboration in product development via Internet newsgroups and e-mail exchanges**

### 3. SWOT analysis:

SWOT (strengths, weaknesses, opportunities, and threats) analysis is a framework used to evaluate a [company's competitive position](#) and to develop strategic planning. SWOT analysis assesses internal and external factors, as well as current and future potential.

A SWOT analysis is designed to facilitate a realistic, fact-based, data-driven look at the strengths and weaknesses of an organization, initiatives, or within its industry. The organization needs to keep the analysis accurate by avoiding pre-conceived beliefs or gray areas and instead focusing on real-life contexts. Companies should use it as a guide and not necessarily as a prescription.

#### 4. CRM Stages:

The CRM process is a strategy for keeping every customer interaction personalized and meaningful that consists of five main steps.

##### 1. Customer Acquisition

Promotion of products – build a relationship – first date

##### 2. Customer Extension

An established relationship – cross-selling & up-selling

##### 3. Customer Retention

Adapt to customer requirements – requires a complex understanding of customer needs.

Can an organisation pursue all 3 objectives – extremely difficult