Information Systems

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Introduction to Computing

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Data and Information

As stated by Olson (2021), Data is defined as the collection and or collected raw values that may either be facts or numbers which will be useful for later examination and understanding, to create meaningful information.

Information refers to the processed, analyzed, summarized, or the formulated meaning from the raw data itself. Information requires critical thinking and in-depth knowledge of the specific field to understand and to make meaningful information-which is useful for all fields of studies.

Data refers to the *raw values or the intrinsic set of values* that are collected from different fields or contexts (i.e. geospatial data, unstructured data, structured data, and or information). Conversely, Information is when "data" itself *is analyzed and integrated with more data* to extract or formulate a meaning from the data collected itself (Data Vs. Information, n.d.).

Information Systems

Information systems cover all there is about collecting, storing, data management, handling information, granting knowledge and digital products. Furthermore, information systems manage business data, customer interaction, and account management, which is useful in both business applications and in customer-service applications (Wordpress, 2025).

Information systems are used by every company that provides online customer services, especially for big companies such as Facebook, Amazon, Apple, Netflix, and Google. In summary, Information Systems are systems that provide human - computer interaction as efficiently as possible in handling vast amounts of information (Zwass & Vladimir, 2025).

Five Types of Information Systems

- Transaction Processing Systems (*TPS*)
- Management Information Systems (*MIS*)
- Decision Support Systems (*DSS*)
- Knowledge Management Systems (*KMS*)
- Executive Information Systems (*EIS*)

Transaction Processing Systems (TPS)

Transaction Processing Systems are the direct interaction between a human user and a computer system, wherein the computer system provides feedback or response to the input of the user. Subsequently, a transaction is the set of operations that work together as a group unit of work, where no single transaction takes a long term effect without all the other operations being active (Loshin, 2012).

Management Information Systems (MIS)

The management information systems are crucial in handling user-data, decision-support, data collection, data management, and provides companies and businesses with data management services. Consequently, MIS assists companies and businesses with decision-making (Dziak, 2025).

Decision Support Systems (DSS)

Decision Support Systems (DSS) are computer based information systems that include systems that aim to support users through decision-making, planning alternatives, compiling raw data, and the optimization of probable solutions. Decision Support Systems are, in definition, systems that aim to provide adequate and systematic decision-making support through user interaction (Naseem et al., 2017).

Knowledge Management Systems (KMS)

As per Smith and Brooks (2013), knowledge management systems (KMS) allows for the creation, collection, storage, and dissemination of information within a group or organization. Additionally, it aims to refine and enhance the ability for users to access the organization's knowledge base, which would deem necessary for the improvement of sharing knowledge, collaboration and innovation.

Executive Information Systems (EIS)

Executive Information Systems (EIS) helps individuals with high positions to allocate better decisions by monitoring the internal and external operations of the environment within the organization. EIS must also be able to access and deliver important data or information within the organization. Information is included due to competitors, and government regulations influencing decisions. In summary, Executive Information Systems are responsible for granting top managers with decisions that would strengthen their competitive advantage (Warmouth & Yen, 1992).

Analysis

Information Systems play a vital role in organizing, analyzing, and processing raw data into meaningful information, which is useful for decision-support and knowledge management systems (Libretexts, 2024). Furthermore, the grasp of information systems covers most businesses, in terms of management information systems, allowing for ease of access from one device to another. Since 3000 BC, humans have been storing, collecting, disseminating and communicating information and the word Information Technology (IT) didn't exist yet (Complete I.T., 2024). In this era of managing information, it was believed that the abacus (the first calculator) was the most efficient way in manipulating or solving mathematical equations, in the same way clay tablets were the fastest way in storing and communicating information. This made me come to the realization that, in this modern age and era, we have advanced so much, to the point that we could store thousands or more of images, documentations, and other storable information into small devices such as mobile phones. The fact that the internet is readily available always, with the condition that internet is connected, is also a testament to the fact that we humans have advanced from manually storing information into clay tablets, to voice recognition applications that could record a thousand words paired with artificial intelligence that could easily analyze and summarize the stored information into concise statements. From manually trading money for goods to online transactions, from having a record-keeping system where individuals manually communicate information to easy-access information throughout any online devices. Information Systems have advanced and adapted for human accessibility exponentially over the years, and will continue to do so, so long as information is shared, accessible, and immediately available. Furthermore, Information Systems emphasizes its importance through business organizations, wherein having an information system plays a key role in collecting information from users, including user data, user preferences, key information from executives, user information and user decision-support systems (*Reasons Why Information Systems Are Important for Business Today*, n.d.). Consequently, Information systems are the foundation of business operations by managing, storing, collecting, and disseminating information to its corresponding users, and without information systems, I've come to the conclusion that businesses, organizations, governments, and any establishments would find it difficult to keep track of all the data and information from its users.

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