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Internet of Things and Artificial Intelligence in Management & Commerce

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Abstract: ***Information has risen to the status of a critical resource in the management of contemporary companies. As a result of the volatile, dynamic, and turbulent business environment that exists today, the growing demand for accurate, relevant, complete, timely, and cost-effective information is being created to drive the process of decision making in order to enhance organizational capabilities in managing opportunities and threats. MIS systems operate in an online mode with a moderate processing speed. In most cases, it is used by lower-level management. Incorporated decision support systems are strong tools that help corporate executives, administrators, and other senior officials in making decisions about a variety of issues. Management Information Systems (MIS) are an advantageous tool for decision-makers in businesses since they provide organized and summarized data in a timely way and enable managers to make sound judgments. Its features, kinds, and the MIS model, with a special emphasis on the effect and function of MIS on decision making.***

Purpose Managers are increasingly looking to adopt the Internet of Things (IoT) to include the vast amount of big data generated in their decision-making processes. The use of IoT might yield many benefits for organizations engaged in civil infrastructure management, but these benefits might be difficult to realize as organizations are not equipped to handle and interpret this data. Propositions for effective IoT adoption in decision-making processes are derived. Findings The results show that decision processes in civil infrastructure asset management have been transformed to deal with the real-time nature of the data. Managers need to adapt new capabilities to be able to interpret the data. Originality/value This paper fulfills an identified need to understand how IoT adoption affects decision-making processes in asset management in order to be able to achieve expected benefits and mitigate risk.

Overall, the integration of AI in business decision making has the potential to drive organizational success and shape the future of business practices.

Key Words: Artificial intelligence, business decision making, Management Information System, Information Systems.

However, as organizations embrace AI in their decisionmaking processes, it is crucial to address certain challenges. Data privacy and security concerns arise due to the reliance on large amounts of sensitive information. Ethical considerations, such as the responsible and transparent use of AI, must be carefully managed to ensure that decision making aligns with societal values. Additionally, the impact on the workforce needs to be considered, as AI systems automate certain tasks, potentially changing job roles and necessitating reskilling or upskilling initiatives. The integration of artificial intelligence in business decision making has the potential to revolutionize how organizations operate and strategize. By enhancing efficiency, accuracy, and innovation, AI empowers businesses to harness the power of data and make informed decisions in a dynamic and competitive landscape. However, the responsible and ethical use of AI, along with considerations of data privacy, security, and workforce impact, must be carefully navigated. As businesses continue to embrace AI technologies, the landscape of decision making is set to undergo significant transformations, shaping the future of organizations across various industries.

INFORMATION SYSTEM- Information system are constantly changing and evolving as technology continue to grow. Basically we have many types of information system like management information system, decision support System, transaction processing system, expert system. But we discuss management information system and decision support system. In Management information system these system assist lower level management in problem solving and making decision (Manian, 2011). They use the result of transaction processing and some other information also. It is a set of information processing functions. It should handle queries as quilt as they arrive. An important element of management information system is database. In decision support system, they assist higher management to make long term decisions. These types of systems handle unstructured or semi structured decision .A decision is considered unstructured if there are no clear procedure for making the decision and if not all the factor to be considered in the decision can be readily identified in advance. The decision support system these are not of recurring nature. Some recur infrequently or occur only once. A decision support

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system must very flexible .The user should be able to produce customized reports by giving particular data and format specific to particular situations. There are different views in determining the types of information systems and their classifications (Laudon andLaudon,

Transaction Processing System (TPS) This is also referred to as data processing system. It performs the essential role of collecting and processing the daily transactions of the organization. They serve at operational levels of the organization. Examples of transactions include purchase payroll, reservation, invoices, payments, shipping, registrations, orders and sales. Expert System (Specialist) (ES) This is an extension of the decision support system. It is a programmed decision-making information system that captures and reproduces the knowledge and expertise of experts and then simulates the thinking or actions of that expert to help users with less expertise. These applications are implemented with Artificial Intelligence (AI) technology. Artificial intelligence is a computer-based technology that has the ability to behave like humans, learn languages and emulate human expertise and decision-making. Office Automation System (OAS) This system supports a wide range of business activities. Office systems are applications designed to improve workflow and communicate among workers regardless of their physical locations. Typical office system handles and manages document (through word processing, desktop publishing, document imaging and digital filings), scheduling (through electronic calendars) and communication (through electronic mail, voice mail and video conferencing). Personal and Work Group Information Systems (WGSS) Personal information system is the system designed to meet the needs of a single user while work group system is designed to meet the needs of a workgroup and to increase the productivity of the group. Management Information System(MIS) The Management Information System (MIS) is a concept of the last decade or two. It has been understood and described in a number ways. It is also known as the Information System, the Information and Decision System, the Computer- based information System (Davis & Geist, 2004). Definition of Management Information Systems: The MIS is defined as a system which provides information support for decision making in the organization (Barton&Parolin, 2005). The MIS is defined as an integrated system of man and machine for providing the information to support the operations, the management and the decision International Journal of Economics, Commerce and Management, United Kingdom Licensed under Creative Common Page 5 making function in the organization (Bendoly, 2008). The MIS is defined as a system based on the database of the organization evolved for the purpose of providing information to the people in the organization. The MIS is defined as a Computer based Information System

ROLE OF ARTIFICIAL INTELLIGENCE IN BUSINESS- The role of AI in modern digital life is quickly expanding, and the advertising and marketing industries are no exception. Artificial intelligence is transforming industries one by one, from the witty and intelligent Siri to Tessa's self-driving car to Google AI that could really learn video games in only a few hours. Artificial intelligence can be used for a variety of purposes, such as identifying data trends to reduce market risks, improving customer service with virtual assistants, or even analyze millions of documents stored on various servers within an organization to identify compliance failures. But businesses have only lately been able to foresee and anticipate the opportunities that robots and artificial intelligence (AI) might offer to the future of business. Businesses can reduce their faults thanks to AI's consistency and rule-based programming. Its endurance, together with ongoing upgrades and the capacity to record procedures, leads to fruitful economic prospects. Artificial intelligence applications make use of robotics, computer vision, voice recognition, machine learning, and natural language processing technology. There are several commercial prospects offered by these technologies.

Decision Support System(DSS) Decision-making is an essential component of organizational life. Decision makers receive and analysis information using many different media, including traditional print, group and interpersonal information exchanges and computer-based tools Decision support systems (DSS) is a generic concept that describes information systems that provide analytical modelling and information to support semi-structured and unstructured organizational decision making.

Common characteristics of DSS include-

- Problem structure, used in semi-structured and unstructured decision context
- Intended to support and augment decision makers not replace them
- Supports most phases of decision-making process
- Uses underlying data and model
- Interactive: DSS is designed to be an interactive decision aid

A decision support system (DSS) is an integrated set of computer tools allowing a decision maker to interact directly with computer to retrieve information useful in making semi structured and unstructured decisions (Power, 2002,. Ezine, 2010. James, 1998). The Decision support system are able to help groups to make the decision .It should not be responsible

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for individual decision making .The Decision support system is easy to use .A user should not be required to be computer operator to generate reports .It should be convenient for the user to use DSS

Types of Decision Support System There are a number of decision support systems. These can be categorized into five types: communications driven DSS, data driven DSS, document driven DSS, knowledge driven DSS and model driven DSS.A communication driven DSS supports more than one person working on a shared task. Many collaborators work together to come up with a series of decision to set in motion a solution or strategy. Most communications driven DSSs are targeted at internal teams, including partners. The most commons technology used to deploy the DSS is a web or a client server. In general, groupware, bulletin boards, audio and video International Journal of Economics, Commerce and Management, United Kingdom Licensed under Creative Common Page 7 conferencing are the primary technologies for communication driven decision support. Data driven DSS model puts its emphasis on collected data that is then manipulated to fit the decision maker's needs. This data can be internal, external and in a variety of formats. This model emphasizes access to and manipulation of a time series of internal company data and sometimes external and real time data. Simple file systems accessed by query and retrieval tools provide the most elementary level of functionality. Most data driven DSSs are targeted at managers, staff and also product / service suppliers. It is used to query a database or data warehouse to seek specific answers for specific purposes. It is deployed via a main frame system, client server link or via web. Document driven DSSs are more common, targeted at a broad base of user groups. The purpose of such a decision support system is to search web pages and find documents on a specific set of keywords or search terms. This model uses computer storage and processing technologies to provide document retrieval and analysis. A document driven DSS model uses documents in a variety of data type such as text documents, spreadsheets and database records to come up with decisions and manipulate the information to refine strategies. The usual technology used to set up such decision support systems are via web or a client / server system. Knowledge driven DSSs are a catch-all category covering a broad range of systems covering users within the organization setting it up, but may also include others interacting with the organization. It is essentially used to provide management advice or to choose products or services. Knowledge-driven DSS can suggest or recommend actions to managers. These DSS are person-computer systems with specialized problem-solving expertise. The expertise consists of knowledge about a particular domain, understanding of problems within that domain, and skill at solving some of these problems. Thetypical deployment technology used to set up such systems could be client / server systems, the web, or software running on stand-alone PCs. Model driven DSSs are complex systems that help analyses decisions or choose between different options. A model driven DSS emphasizes access to and manipulation of financial, optimization and / or simulation models. Simple quantitative models provide the most elementary level of functionality. Modeldriven DSS use limited data and parameters provided by decision makers to aid decision makers in analyzing a situation, but in general large data bases are not needed for modeldriven DSS. These are used by managers and staff members of a business, or people who interact with the organization, for a number of purposes depending on how the model is set up. These DSSs can be deployed via software / hardware in stand-alone PCs, client/server systems or the web (Holsapple & Whinston, 2006)

DECISION - MAKING- Decision - making is the process by which organizational members choose specific course of action in response to threats and opportunities (George and Jones, 1996: 428). Good decision result in courses of actions that help an individual, group or organization to be effective, the opposite is its reverse. Every organization grows, prospers or fails as a result of decisions made by International Journal of Economics, Commerce and Management, United Kingdom Licensed under Creative Common Page 9 It is members; and decision according to Daft (2001: 399) can be risky and uncertain without any success. Simon (1984), a leading authority in management decision- making considers that decision making comprises four principal phases: - Intelligence- searching the environment for conditions calling for decision making. - Design- inventing, developing and analyzing possible courses of actions. This involves processes to understand the problem, to generate solutions and testing of solutions for feasibility. - Choice- selecting an alternative or course of action from those variables. - Review - assessing past choices. This model was later incorporated by George Huber into an expanded model of the entire problem-solving process

To make effective and efficient use of emerging information and communication technologies, many companies take steps to prepare themselves. There are two advantages to using information and communication technologies in a business setting. For starters, it makes it simple for companies and managers to gather information. This will result in more assistance for the decision-making process. Second, the use of information and communication technology allows businesses to function more effectively in a globally competitive context and to make more informed decisions more quickly and efficiently. When it comes to decision-making, information and communication technology improves the quality of decisions, which is a

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critical element for every company. Bring about significant changes at all levels of the company, including organizational leadership and strategy, as well as in the behaviour of individuals. Information and communication technology has evolved into an important component of the decision-making process in organizations, with managers at all levels increasingly relying on information and communication technology for assistance. The area of information management system is undoubtedly made possible by current information and communication technologies (ICTs). When information and communication technology is used to collect, analyse, and evaluate information as well as transfer it from one location to another, it can result in instant access to information, cost reductions, better products, careful coordination, shorter lead times, improved control, and ultimately better services. Management has, without a question, been a requirement for humans from the beginning of time. If you examine the many management tasks, it can be plainly observed that the core of all management activities is decision-making. The ability to make decisions is an essential component of management. The management is very intelligent in each job. In determining the policies and growth goals of the organization. Organizational design, selection, assessment, and management techniques in all forms, as well as decision-making, are some of the most important basic foundations of every organization. In its most basic description, decision-making is the process of selecting a route between two or more alternatives.

With more data, AI gets better. Businesses produce more data every day, so it can learn from it, adapt as it is collected, and use it to get the desired results for the organization or goal. A business may gain a lot from AI data collection that uses previous data to anticipate future results. Real-time processing allows businesses to access data to assist in solving any unresolved problems or making innovations. In the commercial sector, AI and decision-making are becoming increasingly important. AI solutions may give companies a competitive edge by enhancing customers' perceptions of and interaction with digital strategy-based applications. Innovational aspects geared towards the social cognitive capacities of the AI age will be provided through entrepreneurial intention through the production of new goods. The final result is frequently that fighting and mental training should prioritise safeguarding the advent of AI to create innovative products and suppliers. Businesses can profit from integrating next-generation AI technology if they have a clear electronic Internet business plan that includes their goals, efficiency, and legal framework.

RESULTS AND DISCUSSIONS- The modern business paradigm is altered by artificial intelligence. Many businesses can improve their efficacy and efficiency by using AI, but doing so comes at a cost of spending a large sum of money to ensure that all of the infrastructure required for such a system to operate normally is in place. Each organisation must also undergo a digital transformation that affects how some organisational departments work in order to use AI. Moreover, digital transformation refers to the conversion of the conventional business model to a virtual system, such as the cloud. Because AI systems may be used for a variety of analyses as well as decision support, they can have a substantial influence on how well organisations function. The organization's quality management is built on a decision-making process relying on the facts that are documented.

The integration of artificial intelligence in business decision making has the potential to revolutionize how organizations operate and strategize. By enhancing efficiency, accuracy, and innovation, AI empowers businesses to harness the power of data and make informed decisions in a dynamic and competitive landscape. However, the responsible and ethical use of AI, along with considerations of data privacy, security, and workforce impact, must be carefully navigated. As businesses continue to embrace AI technologies, the landscape of decision making is set to undergo significant transformations, shaping the future of organizations across various industries.

CONCLUSION- The approach of businesses to make decisions is revolutionised by artificial intelligence. Businesses may make better decisions by utilising AI systems' ability to analyse vast volumes of data and generate predictions and suggestions based on that data. Ultimately, AI has the power to revolutionise corporate decision-making by delivering quicker and more precise insights that can guide both operational and strategic choices. To minimise unforeseen repercussions and preserve consumer confidence, organisations must make sure AI is utilised responsibly and openly. The use of AI in decision-making by organisations and consumers is without a doubt the future. Technology offers many options and a simple means for making business decisions. Al is an extremely clever gadget. Data mining and big data are used to assist it make decisions. The study denies the idea that AI would replace humans and instead says that it is a very dynamic tool that is helpful for making decisions.

The role of information in decision making cannot be overemphasized. Effective decision making demands accurate, timely and relevant information. MIS provides accurate and timely information necessary to facilitate the decision-making process and enable the organizations planning, control, and operational functions to be carried out effectively. MIS also plays

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the crucial role of providing a wide range of streamlined options from which decision-makers are able to make their preferred choices and this ensures that whatever choices are made by decision makers, the outcome, more often than not, becomes positive. This, as a matter of fact, is the reason why many decision makers tend to prefer using MIS tools when making tough business choices. MIS as renowned concept, having good decision choices guarantees viable decisions in our businesses. From the above discussion we can say that decision support system focus on decision making whereas management information system (MIS) focus on information. In Management information system it works on online mode but in decision support system it works on real time mode. The management support system supports medium level of data but in decision support system it supports huge volume of data. The management support system uses low supports of graphics but in decision support system it uses large support of graphics. The management information system focus only on fully structured task or routine for decision but decision support system focuses on structure as well as semi-structured data. Beside the above differences both MIS and DSS are core of an information system satisfying the requirement of different levels of management.

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