CHAPTER 6

DECISION SUPPORT SYSTEM (DSS) & KNOWLEDGE MANAGEMENT (KM)

Dr. Richa Mishra

Assistant Professor, Department of Commerce

LUCKNOW PUBLIC COLLEGE OF PROFESSIONAL STUDIES, LUCKNOW

drrichalpcps1@gmail.com

KEYWORD	ABSTRACT
Knowledge Management(KM), Decision Support System(DSS), Decision Making	Computer-based systems known as decision support systems (DSS) provide decision-makers with data and tools to help them make decisions. The process of creating, sharing, utilizing, and managing information and knowledge within an organization is known as knowledge management (KM). Together, DSS and KM can be utilized to further develop dynamic cycles by furnishing chiefs with the data they need to pursue better choices.

6.1. INTRODUCTION

By providing access to pertinent information and knowledge, DSS and KM collaborate to support decision-making. Data, models, and analytical tools that help decision-makers comprehend the consequences of their actions can be provided by DSS. On the other hand, knowledge management (KM) can assist decision-makers

in accessing and managing the information and knowledge they require to make educated choices.

By providing access to a wide range of information sources, such as internal and external databases, documents, and expertise from across the organization, knowledge management (KM) can assist decision-makers. Additionally, knowledge management (KM) can assist decision-makers in locating pertinent information and knowledge that can aid in decision-making.

DSS can use this knowledge and information to provide relevant data and analysis to decision-makers, assisting them in making well-informed choices. A DSS, for instance, can gain insight into market trends, customer behavior, and other factors that can influence business decisions by utilizing data from both internal and external sources.

By and large, the incorporation of DSS and KM can assist associations settle on better choices by furnishing chiefs with admittance to the data and information they need to pursue informed choices.

6.2 FUNDAMENTALS OF SYSTEMS FOR DECISION SUPPORT

The fundamentals of decision support systems include the following:

- **DATA MANAGEMENT:** Data is a big part of the decision-making process for decision support systems. The foundation of DSS is data management, which involves collecting, organizing, and storing data in a way that makes it easy for the system to use. Information the executives additionally incorporates information quality control, information security, and information reconciliation.

- **ALGORITHMS & MODELS:** DSS networks utilize numerical models and calculations to examine information and give experiences that help navigation. Depending on the nature of the issue being tackled, these models and algorithms can be straightforward or more complicated. Regression analysis, optimization, simulation, and decision trees are a few common models utilized in DSS.

- **UI:** The interface between the user and the DSS is the user interface (UI). It should be simple to use and intuitive, and it should have the tools needed to enter data, run analyses, and look at the results. Additionally, the user interface ought to be adaptable, enabling users to personalize the presentation of information to suit their requirements.

- **INFORMATION/ KNOWLEDGE MANAGEMENT:** Knowledge management is used to make sure that decision support systems have access to relevant data for making decisions. Information the executives includes gathering, putting together, and putting away data like accepted procedures, rules, and master information.

- **COLLABORATION:** Collaboration among team members is supported by many decision support systems. Cooperation apparatuses empower colleagues to share data, talk about thoughts, and work together to go with informed choices.

- **FEEDBACK AND EVALUATION:** In order to guarantee that a decision support system is meeting the requirements of its users, it is necessary to provide feedback and permit evaluation. User surveys or usage data can be used as feedback. Comparing the outcomes of decisions made with the

assistance of the system to those made without the assistance of the system is one method of evaluation.

The DSS networks are useful assets that can assist people and associations with pursuing informed choices. The underpinnings of DSS incorporate information the board, models and calculations, UI, information the executives, coordinated effort, and input and assessment.

Decision support systems have the potential to provide valuable insights that support improved decision-making by integrating these components.

6.2.1 THE BENEFITS

Organizations can gain a number of advantages by combining knowledge management (KM) and decision support systems (DSS):

- **DECISION-MAKING EFFICIENCY**: DSS and KM can assist decision-makers in making better-informed decisions by providing them with relevant and timely information and knowledge. Better outcomes, increased productivity, and effectiveness may result from this.

- **IMPROVED COLLABORATION:** Knowledge management (KM) can facilitate collaboration and enhance the quality of decision-making by allowing decision-makers to access the knowledge and expertise of others within the organization.

- **ENHANCED EFFECTIVENESS:** Many routine tasks can be automated with DSS, allowing decision-makers to concentrate on more strategic choices. Knowledge management (KM) can speed up decision-makers' access to relevant data and expertise, reducing decision-making time.

- **BETTER RISK MANAGEMENT:** DSS can assist chiefs with recognizing possible dangers and amazing open doors, permitting them to settle on choices that limit risk and augment expected rewards.

- **INNOVATION ENHANCEMENT**: KM can help associations catch and offer information and skill, advancing development and innovativeness. DSS can assist chiefs with assessing novel thoughts and distinguish valuable open doors for development.
- **COST REDUCTION:** DSS and KM can help businesses save money by enhancing decision-making and reducing decision-making time.

Generally speaking, the reconciliation of DSS and KM can assist associations with pursuing better choices, further develop coordinated effort and proficiency, and drive advancement and cost investment funds.

The case of the United States Army Medical Command (MEDCOM) is one illustration of the integration of knowledge management (KM) and decision support systems (DSS). DSS and KM were utilized by MEDCOM to enhance the quality of soldiers' and their families' medical care.

A centralized knowledge management system was developed by MEDCOM that combined medical data from a variety of sources, including clinical guidelines and medical records, into a single database. After that, they analyzed this data with DSS and provided decision-makers with real-time data on patient outcomes and care.

The DSS gave data on various clinical issues, for example, medicine use, infection the board, and patient results. The DSS could, for instance, look at data on the use of a specific medication and provide details about its effectiveness, potential side effects, and the right dosages.

MEDCOM was able to enhance patient care by supplying decision-makers with the data they required to make better-informed choices as a result of the integration of DSS and KM. For instance, in the event that the DSS distinguished an expected issue

with a specific prescription, chiefs could rapidly change treatment intends to limit the gamble of damage to patients.

The framework additionally took into account the sharing of best practices and mastery across the association. MEDCOM made an information store that permitted clinicians to get to the most recent examination and clinical rules, working on the nature of care gave to patients.

Generally, the coordination of DSS and KM permitted MEDCOM to work on the nature of care gave to troopers and their families by furnishing leaders with constant data and admittance to the most recent examination and clinical rules. Additionally, the system promoted innovation and ongoing improvement by enhancing organization-wide collaboration and knowledge sharing.

The benefits of integrating decision support systems (DSS) and knowledge management (KM) together, as well as the obstacles that must be overcome, while the integration of DSS and KM can offer numerous advantages to organizations, there are also some obstacles that must be overcome:

- **Quality of data:** The viability of DSS and KM relies upon the nature of the information and information being utilized. Assuming the information is mistaken, inadequate, or obsolete, the outcomes created by the framework may not be solid.

- **Inundation of information:** DSS and KM can give decision-makers access to a lot of data and knowledge, which can be overwhelming. They might not be able to find the most useful information, and they might miss important insights.

- **Challenges with integration:** It can be difficult and complicated to integrate various systems and data sources. In order to ensure compatibility, businesses may need to modify existing systems or purchase new technology.

- **Cultural obstacles:** Associations might confront social hindrances while executing DSS and KM, especially in the event that there is protection from change or an absence of comprehension of the advantages of these frameworks.

- **Concerns for security:** Because DSS and KM systems might contain private or sensitive data, it's critical to make sure the right security measures are in place to keep the data safe and prevent unauthorized access.

- **Cost:** It can be expensive to set up and maintain DSS and KM systems, especially if new technology or staff training is required.

By and large, associations should address these difficulties to guarantee the powerful execution and utilization of DSS and KM frameworks. This might include putting resources into innovation, further developing information quality, giving preparation and backing to staff, and tending to social and security concerns.

6.3 KNOWLEDGE MANAGEMENT AIDS IN DECISION-MAKING (INDIAN CONTEXT)

In recent years, knowledge management's role in decision support has grown in India. In order to enhance their decision-making and knowledge-sharing processes, a number of Indian organizations have begun to implement DSS and KM systems.

Indian Railways is a notable example, having implemented a DSS and KM system to enhance its repair and maintenance procedures. To provide real-time information on the state of railway equipment and train schedules, the system integrates data from a variety of sources, including weather reports, maintenance logs, and train schedules. As a result, potential issues can be quickly identified and remedied before they become more serious.

The Indian Space Research Organization (ISRO), which uses DSS and KM to support its space missions, is another illustration. To provide decision-makers with

real-time information on weather conditions, natural disasters, and other potential hazards, the organization has developed a centralized knowledge management system that integrates data from a variety of sources, such as weather reports and satellite images.

The system has been used to support a number of successful space missions, such as the Chandrayaan-2 mission to the Moon and the Mars Orbiter Mission. ISRO has been able to reduce the likelihood of mission failure and enhance its decision-making processes by utilizing DSS and KM.

Overall, DSS and KM adoption in India is still in its infancy, but the benefits of these systems are becoming increasingly recognized. We can anticipate further expansion in the utilization of DSS and KM in India as businesses continue to make investments in technology and knowledge management procedures.

6.3.1 THE GLOBAL SCENARIO

As businesses expand and operate in various regions, decision support through knowledge management has become increasingly important on a global scale. The following are some examples of situations in which knowledge management-based decision support may be of significant use:

- **GLOBAL SUPPLY CHAIN MANAGEMENT (GSCM):** In a worldwide store network, choice help through information the board can give basic bits of knowledge on obtaining, coordinated factors, and request estimating. Businesses can make well-informed choices regarding which suppliers to work with, how to optimize their supply chain, and how to respond to disruptions by utilizing data and analytics.
- **MARKET RESEARCH:** With organizations working in various districts, it becomes fundamental to have a profound comprehension of nearby

market patterns and client inclinations. Choice help through information the board can help organizations accumulate and examine information on market patterns, contender systems, and client conduct to pursue informed choices on market passage and development.

- **MANAGEMENT OF RISK/ RISK MANAGEMENT:** Businesses face a variety of risks in today's uncertain world, including threats to cybersecurity, political instability, and natural disasters. Choice help through information the executives can assist organizations with recognizing possible dangers and foster alternate courses of action to relieve them. Businesses can reduce the impact of disruptions and make well-informed decisions about risk management strategies by utilizing data and analytics.

- **MANAGEMENT OF TALENT/ TALENT MANAGEMENT**: Attracting and retaining top talent is essential to an organization's success in a globalized business environment. Choice help through information the executives can help organizations accumulate and dissect information on worker commitment, execution, and preparing needs. Businesses can make well-informed decisions regarding strategies for talent development, succession planning, and retention by utilizing this data.

In conclusion, in a globalized business environment, decision support through knowledge management is essential for businesses' ability to make informed decisions. Businesses can gain a competitive advantage and long-term success by utilizing data and information.

6.4 BUILDING THE EFFECTIVE DECISION SUPPORT SYSTEM, HOW

A methodical approach that takes into account the requirements of the organization as well as its users is necessary for the development of efficient decision support systems (DSS). When creating an efficient decision support system, the following are some considerations to make:

- **DETERMINE THE ISSUE:** The most important phase in building a DSS is to distinguish the issue that the framework will address. This includes understanding the dynamic cycle, recognizing the information expected to help the choice, and characterizing the targets and objectives of the framework.

- **DEFINE THE NEEDS**: Determining the system's requirements is crucial after identifying the issue. This involves determining the user interface requirements, the kinds of analyses that will be carried out, and the sources of the data.

- **PLAN THE FRAMEWORK:** The requirements that were established in the step prior should serve as the foundation for the DSS design. The architecture for data storage and management, the models and algorithms used to analyze the data, and the user interface design should all be part of the design.

- **ESTABLISH THE SYSTEM:** The system can be developed once the design is finished. This involves building the parts of the system, putting the data sources together, and testing the system to make sure it meets the requirements that were set in the previous step.

- **INSTALL THE SYSTEM:** When the framework has been created and tried, it tends to be sent. This involves configuring the system, training the users, and installing the system on the appropriate software and hardware.

- **EVALUATE THE SYSTEM:** It is important to evaluate the effectiveness of the DSS to ensure that it meets the needs of the organization and its users. This involves measuring the system's performance, collecting feedback from users, and making any necessary changes to the system to improve its effectiveness.

- **KEEP THE SYSTEM RUNNING:** Maintaining the system is the final stage in the process of creating an efficient DSS. This entails keeping an eye on how well the system is working, maintaining it on a regular basis, and

updating it as necessary to make sure it continues to meet the requirements of the organization and its users.

A methodical approach that takes into account the requirements of the organization as well as its users is necessary for the development of an efficient decision support system. By following the means illustrated above, associations can assemble DSS that give significant experiences that help better independent direction.

6.4.1 CASE STUDY ON DECISION SUPPORT SYSTEMS (DSS) THROUGH KNOWLEDGE MANAGEMENT (KM)

Let us consider an illustration of how a medical services association carried out choice emotionally supportive networks (DSS) through information the executives (KM) to improve their tasks and patient consideration.

Case Study: KM and DSS Integration in a Healthcare Organization

Introduction: The healthcare organization had trouble managing patient care effectively, allocating resources effectively, and improving clinical decision-making. To address these difficulties, the association chose to coordinate DSS with KM to upgrade dynamic cycles.

Case Study Context: There were numerous departments within the healthcare organization, including hospitals, clinics, and research facilities. The association intended to use its immense measure of clinical information and information to give better understanding consideration, lessen clinical mistakes, and smooth out tasks.

Implementation of Knowledge Management for DSS: To collect, organize, and disseminate medical knowledge, the organization implemented KM practices. The following were key implementation steps:

- Conducting a knowledge audit to locate important organizational knowledge sources.

- Putting in place a centralized repository of knowledge to store and manage medical guidelines, research results, and best practices.

- Establishing procedures for the effective collection of new information through knowledge capture.

- Establishing mechanisms for the exchange of knowledge, such as online forums, communities of practice, and regular sessions for the exchange of knowledge.

6.5 ULTIMATE INTEGRATION OF DSS AND KM: In order to provide healthcare professionals with evidence-based decision support, the organization incorporated DSS into their KM system. This integration had to do with:

- Constructing DSS modules that made use of the knowledge repository in order to provide real-time access to pertinent medical data.

- Supporting diagnosis, treatment planning, and patient monitoring by incorporating clinical decision rules and algorithms into the DSS.

- Ensuring seamless data exchange between the DSS and current healthcare information systems, such as electronic health records (EHRs).

6.6 IMPACT ON PERFORMANCE AND RESULTS: There were a number of benefits to KM's integration of DSS:

- **CLINICAL DECISION-MAKING IMPROVEMENT:** Because healthcare professionals had access to the most recent medical information,

research findings, and best practices, they were able to make decisions that were more based on evidence and were more well-informed.

- **IMPROVED PATIENT CARE:** Based on patient data, the DSS made customized treatment recommendations, which resulted in better treatment outcomes and fewer medical errors.

- **STREAMLINED PROCEDURES:** Asset allotment and planning choices were streamlined, prompting better usage of medical services assets and worked on tolerant stream**.**

- **CONTINUAL ADVANCEMENT:** The KM framework worked with the catch and dispersal of illustrations got the hang of, empowering persistent improvement of clinical practices and cycles

6.7 BEST PRACTICES AND LESSONS LEARNED

- Lay out areas of strength for an administration culture inside the association, stressing the significance of information sharing and coordinated effort.
- Ensure that the DSS has user-friendly interfaces that make it simple for healthcare professionals to use and access the system.
- Keep the knowledge repository up to date and maintained on a regular basis to guarantee the information's accuracy and relevance.
- To make the integrated DSS more effective and usable, encourage user participation and feedback

6.8 CHALLENGES AND OPPORTUNITIES IN THE FUTURE

- Consider utilizing cutting-edge technologies like artificial intelligence and machine learning to further enhance the DSS and KM system's capabilities.

- Address concerns regarding patient data access and sharing within the integrated system in terms of privacy and security.
- Keep an eye on and evaluate the DSS and KM system's performance on a regular basis, looking for areas of growth and improvement.

6.9 CONCLUSION

The healthcare organization's integration of DSS through knowledge management led to more efficient operations, improved patient care, and improved decision-making. This integrated system's successful implementation is an illustration of how the combination of DSS and KM can benefit businesses in a variety of industries.

Note: This contextual investigation is an imaginary model made for illustrative purposes. The subtleties and results can differ in view of genuine hierarchical settings**.**

6.10 REFERENCES

- Alavi, M., & Leidner, D. E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. MIS quarterly, 25(1), 107-136.
- Davenport, T. H., & Prusak, L. (1998). Working knowledge: How organizations manage what they know. Harvard Business Press.
- Wiig, K. M. (1993). Knowledge management foundations: Thinking about thinking—how people and organizations create, represent, and use knowledge. Schema Press.
- O'Dell, C., & Grayson, C. J. (1998). If only we knew what we know: The transfer of internal knowledge and best practice. Free Press.
- Zack, M. H. (1999). Developing a knowledge strategy. California management review, 41(3), 125-145.

- Bhatt, G. D. (2001). Knowledge management in organizations: Examining the interaction between technologies, techniques, and people. Journal of knowledge management, 5(1), 68-75.

- Choo, C. W. (2006). The knowing organization: How organizations use information to construct meaning, create knowledge, and make decisions. Oxford University Press.

- Gupta, J. N. D., Sharma, S. K., & Vrontis, D. (2019). Knowledge management and decision making in organizations: A literature review. Journal of knowledge management, 23(5), 874-902.

- Sallis, E. (2002). Total quality management in education. Routledge.

- von Krogh, G., Ichijo, K., & Nonaka, I. (2000). Enabling knowledge creation: How to unlock the mystery of tacit knowledge and release the power of innovation. Oxford University Press.

…………………………………… ✦ ……………………………………