



Building Knowledge based Decision Support Systems

Enhanced Decisioning

WHAT IS DSS?

A decision support system (DSS) is an information system that assists a business in decision-making operations that need evaluation, judgement, and a sequence of activities. The information system supports a firm's mid- and high-level management by processing large amounts of unstructured data and gathering knowledge that can be used to deal with different situations. A DSS is used for demand forecasts, inventory and operations data, and delivering service to clients in a convenient form. A well-designed DSS helps decision makers in integrating from several sources, comprising raw data, documentation, actual knowledge from employees, administrators, executives, and business practices. Decision support systems would help decision makers by statistically supporting managerial decisions that would otherwise be dependent on intuition and experience. In addition to typical DSS features, an intelligent knowledge base would be required to quantify the effects of both technical (hard) and subjective (soft) restrictions.

WHAT IS KNOWLEDGE BASED-DECISION SUPPORT SYSTEMS(KB-DSS)?

Knowledge-based decision support systems are technologies intended to have more precise decision-making for the converging industries by allocating sufficient accurate and appropriate technology, information, and knowledge management. The knowledge base includes information from internal sources and external sources. KB-DSS includes a knowledge base and an inference engine to the standard DSS's three fundamental components: a database management sub-system (DBMS), a model base management sub-system (MBMS), and a user interaction management sub-system, often known as a human-computer interface (HCI).

AI technology has allowed the KB-DSS to gain additional capabilities such as improved knowledge modelling and reasoning. With knowledge management systems, knowledge is represented in an active format such as quantitative computer models, and decision-makers need only run the models to produce solutions. A knowledge-driven DSS is a computer-based reasoning system that provides users with information, comprehension, and ideas to help them make decisions. Knowledge-based DSS software must be able to collect knowledge that is propagated throughout the company in a decentralized system as organisations develop and expand globally. Subject matter specialists must thus be supplied with an interface via which they may transform their expertise into quantitative computer models, which they can subsequently contribute to a central library.

KEY TERMINOLOGIES

Expertise:

A Knowledge based DSS contains expertise in problem-solving methods. The expertise is dependent upon factors such as domain knowledge, understanding the relationships between varied symptoms and methodology to solve these problems.

Expert System:

An intelligent agent or artificial intelligence system is a computer system that replicates the decision-making skills of an expert system. It is built in a manner such that it follows the rules, gives proper reasoning with detailed information and helps in drawing conclusions from them.

Knowledge Base:

A DSS will leverage structured (facts, rules, laws, characteristics, functions, processes, and relationships) as well as unstructured data to make decisions.

Domain Expert:

A domain expert is a subject matter expert who possesses competence and authority in a particular sector. A domain expert is an essential member of the team establishing a decision support system.

Interface Engine:

It is a software solution designed to make the design and development of application interfaces across application systems easier. It is usually a middleware programme that transforms, routes, and translates messages across several connection points.

CHARACTERISTICS OF KNOWLEDGE BASED DECISION SUPPORT SYSTEMS

Knowledge-driven DSS can store and apply knowledge for a wide range of specialized problems/tasks that would normally require the assistance of expert systems. Classification, configuration, diagnosis, interpretation, planning, and prediction are examples of fundamental activities. Classification is the process of dividing a single instance into a larger class based on criteria. Configuration is the process of arranging items based on performance requirements or restrictions. Diagnosis comprises speculating on a cause based on symptoms and contextual information. The addition of meaning, explanation, and potentially comprehension in a given event or setting is referred to as interpretation. Planning generally entails arranging a variety of actions or procedures to obtain intended goals in a restricted circumstances. Prediction is the method of discovering and forecasting a system's future state.

The characteristics of knowledge based decision support systems include:

These systems assist managers in resolving difficult problems:

A DSS typically uses models to analyse problems since modelling enables the testing of various techniques in multiple configurations. An effective implementation leads within resolution of the major problem, whereas a results in the process being restarted at a previous stage.

These solutions offer users to engage with them in the decision-making process:

DSS is used to replicate human reasoning and decision-making; both are capable of taking facts from users, analysing these data, and recommending solutions that are similar to those provided by human experts.

These systems' recommendation are based on human expertise:

Backtrack capability makes it convenient to go back over the measures taken to arrive at a result and then modify a subjective assessment. A confidence interval for a recommendation or diagnosis may be created by the DSS. A user can show confidence information when certain capabilities are accessible in the design and development environment.

These systems employ the heuristic problem-solving method:

It is a technique of problem solving and discovery that employs effective techniques. These approaches may not be optimum, but they can assist achieve short-term objectives. The knowledge developer obtains the essential heuristic information from experts in order to form the suitable skillset. Knowledge Management Systems helps in solving complex problems and assist business experts in taking decisions.

WRAPPING UP

- Mego assists business in decision making with insights by supporting and leveraging the true potential of your Enterprise Data Repository with its decision support systems. Mego helps with essential tools that help in cognitive thought processes, thought pins that investigate your business and AI-driven optimiser and re-optimiser combinations that can assist to swiftly narrow down to the next best optimum solution.

