

## Web-Based Decision Support Systems and Intelligent Decision-Making: A Systematic Analysis

**Authors :** Serhat Tüzün, Tufan Demirel

**Abstract :** Decision Support Systems (DSS) have been investigated by researchers and technologists for more than 35 years. This paper analyses the developments in the architecture and software of these systems, provides a systematic analysis for different Web-based DSS approaches and Intelligent Decision-making Technologies (IDT), with the suggestion for future studies. Decision Support Systems literature begins with building model-oriented DSS in the late 1960s, theory developments in the 1970s, and the implementation of financial planning systems and Group DSS in the early and mid-80s. Then it documents the origins of Executive Information Systems, online analytic processing (OLAP) and Business Intelligence. The implementation of Web-based DSS occurred in the mid-1990s. With the beginning of the new millennia, intelligence is the main focus on DSS studies. Web-based technologies are having a major impact on design, development and implementation processes for all types of DSS. Web technologies are being utilized for the development of DSS tools by leading developers of decision support technologies. Major companies are encouraging its customers to port their DSS applications, such as data mining, customer relationship management (CRM) and OLAP systems, to a web-based environment. Similarly, real-time data fed from manufacturing plants are now helping floor managers make decisions regarding production adjustment to ensure that high-quality products are produced and delivered. Web-based DSS are being employed by organizations as decision aids for employees as well as customers. A common usage of Web-based DSS has been to assist customers configure product and service according to their needs. These systems allow individual customers to design their own products by choosing from a menu of attributes, components, prices and delivery options. The Intelligent Decision-making Technologies (IDT) domain is a fast growing area of research that integrates various aspects of computer science and information systems. This includes intelligent systems, intelligent technology, intelligent agents, artificial intelligence, fuzzy logic, neural networks, machine learning, knowledge discovery, computational intelligence, data science, big data analytics, inference engines, recommender systems or engines, and a variety of related disciplines. Innovative applications that emerge using IDT often have a significant impact on decision-making processes in government, industry, business, and academia in general. This is particularly pronounced in finance, accounting, healthcare, computer networks, real-time safety monitoring and crisis response systems. Similarly, IDT is commonly used in military decision-making systems, security, marketing, stock market prediction, and robotics. Even though lots of research studies have been conducted on Decision Support Systems, a systematic analysis on the subject is still missing. Because of this necessity, this paper has been prepared to search recent articles about the DSS. The literature has been deeply reviewed and by classifying previous studies according to their preferences, taxonomy for DSS has been prepared. With the aid of the taxonomic review and the recent developments over the subject, this study aims to analyze the future trends in decision support systems.

**Keywords :** decision support systems, intelligent decision-making, systematic analysis, taxonomic review

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