

The Implementation of an Intelligent Decision Support System

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The continued deployment of information systems means that organizations are accumulating vast amounts of data. At the same time, organizations can leverage these systems to enhance decision-making. Effective decision-making is data-driven, which means that executives must justify their decisions using quantitative evidence. This memo recommends the implementation of an intelligent decision-support system to improve the quality of decisions made, which should translate to an enhancement of the overall competitive advantage of the organization.

Proposed System

A decision support system (DSS) is a type of information system that assesses vast data quantities to enable accurate and timely problem-solving and decision-making. The typical DSS retrieves data from various storages and applies the relevant models to it to create knowledge (Liutvinavičius & Lopata, 2015). This knowledge is then delivered to the decision-maker through the graphical user interface. Thereafter, the decision-maker utilizes this information in the decision-making process. Figure 1 below depicts the architecture of a DSS.

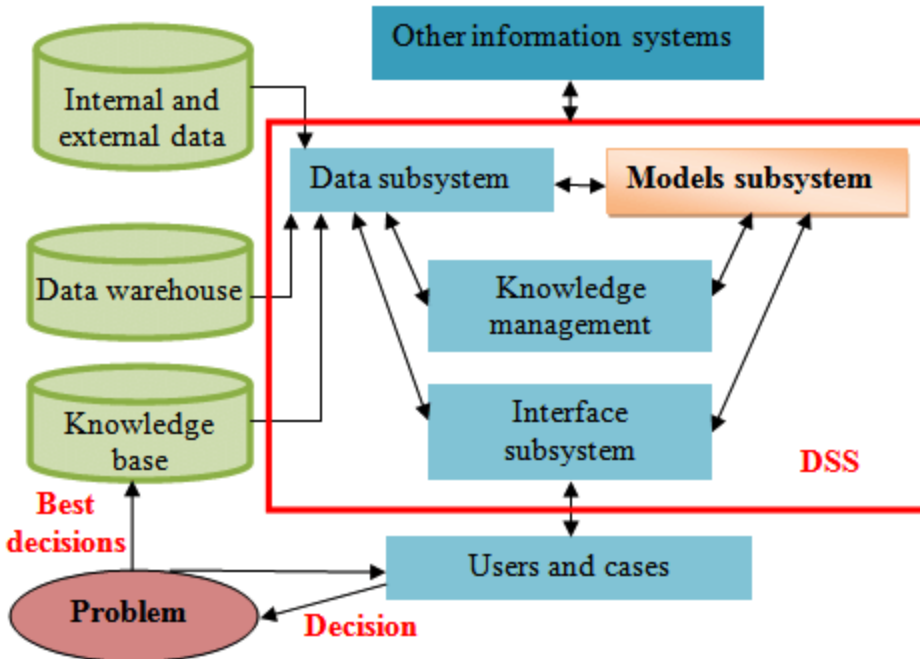


Figure 1: DSS Architecture (Source: Liutvinavičius & Lopata, 2015).

Data Management

The functioning of DSS depends largely on the availability of data. According to Liutvinavičius and Lopata (2015), this data includes internal and external data. In addition to the data warehouse, the data fed into the DSS is also obtained from the knowledge base and other information systems.

Data Types

A DSS utilizes different data types, including text and multimedia content. Besides structured data obtained from databases, modern decision-support systems can work with unstructured data by leveraging machine learning (Tariq & Rafi, 2012). Structured data is highly organized and includes aspects such as credit card numbers, names and addresses, and geolocation.

Storage Methods

The data used in a DSS is drawn from different storages, including data warehouses, end-user databases, external databases, distributed databases, and operational databases. However, the outcomes of the DSS are stored in a relational database to enable effective reporting.

Data Quality

Before data is fed into the DSS, it must be evaluated to ensure that only quality data is utilized. Ultimately, the accuracy of the system depends on the data used. Therefore, there must be a complimentary sub-system for cleaning data by removing noise. The inclusion of this sub-system increases the cost and maintenance of the system but improves the quality of decision-making.

Transition of System Functions

The old system lacked a decision support system to enable effective problem-solving and decision-making. The proposed system intends to leverage the vast quantities of data that the organization continues to accumulate to support decision-making. In addition, the proposed system will leverage machine learning to enable quick decision-making without the need for explicit model programming. Machine learning entails utilizing statistical methods to empower computers to learn and adapt through experience. The inefficiencies of the old system persist mainly because new advances are not being adopted. The proposed system can be integrated with the current information technology infrastructure primarily in terms of data collection. It can also be scaled up by improving the data analysis model to support changing business needs.

References

- Liutvinavičius, M., & Lopata, A. (2015). Knowledge Based Modeling of Financial Decision Support Systems. In *BIR-WS 2015. Joint Proceedings of the BIR 2015 Workshops and Doctoral Consortium co-located with 14th International Conference on Perspectives in Business Informatics Research (BIR 2015), Tartu, Estonia, August 26-28, 2015. Ser.: CEUR Workshop Proceedings. Vol. 1420. ISSN 1613-0073* (pp. 148-155). University of Tartu.
- Tariq, A., & Rafi, K. (2012). Intelligent Decision Support Systems- A Framework. In *Information and Knowledge Management* (Vol. 2, No. 6, pp. 12-20).