Building Data-Driven Decision Support System For Pragmatic Leadership

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Abstract

Decision support system (DSS) is an interactive software-based system that assist leaders (decision makers) compile, analyze and manipulate information from raw-data documents, knowledge frameworks, and/or business models to identify and solve problems and make decisions. In general, DSS' designs and implementations are classified, as Data-Driven, Model-Driven, Knowledge-Driven, Document-Driven and Communication-Driven. Taxonomically, DSS could be passive, active cooperative. A passive DSS is a system that aids the process of decision-making, but that cannot bring out decision, suggestions or solutions. An active DSS can bring out such. A cooperative DSS allows the decision maker modify, complete, or refine the decision suggestions provided by the system, before sending them back to the system for validation. This paper is focused on Cooperative Data-Driven DSS. Data-Driven DSS emphasizes access to and manipulation of time-series of internal organizational data and at times external data using Database Queries and On-Line Analytical Processing (OLAP) tools. Thus, help mangers (leaders) make prompt decisions from the available data and models, easily. The methodology for the research is IDEFIX approach, normally referred to as BOTTOM-UP approach to project work. The DSS is to speed-up data analysis for prompt decision-making through data model of Relational Database Management system (RDBMS). The implementation optimizes the use of Mathematical Relational Algebra model for various report generation. It is implementable at any level, for practical, reality and pragmatic leadership qualities.

Introduction

Decisions are an essential part of life – in and out of a work environment. Decision makers (Leaders) are those who are responsible for making a judgment, sometimes a crucial judgment between two or more alternatives (Gbadeyan, J.A. 1998). Decision in organization will either make or mar the goals of the organization, it is therefore necessary for all decision makers (Leaders) to painstakingly go through the processes of making good, effective decisions, from initial implementation.

The level of productivity, of the success of Leadership, depends on the execution of certain managerial functions such as planning, organizing,

directing and controlling. To carry out these functions, leaders engage in a continuous process of making decisions. Therefore, "Leadership is considered by many as equivalent to decision making".

Leaders in today's continuing complexity of Technology, Information/computer, Organizational Size, structural Complexity, Competition, International impact, Consumerism and various Government Interventions must become more sophisticated-they must learn to utilize new tools and techniques that are being developed in aiding good, effective decision making. These tools are regarded as BUSINESS INTELLIGENCE or DECISION SUPPORT SYSTEM.

It is clear that, productivity and efficiency of an organization are traceable to good decision taken by leaders from time to time. Also degrading or total collapse of an organization could also be pointing to a wrong decision taken by certain leader of the organization.

Decision Making

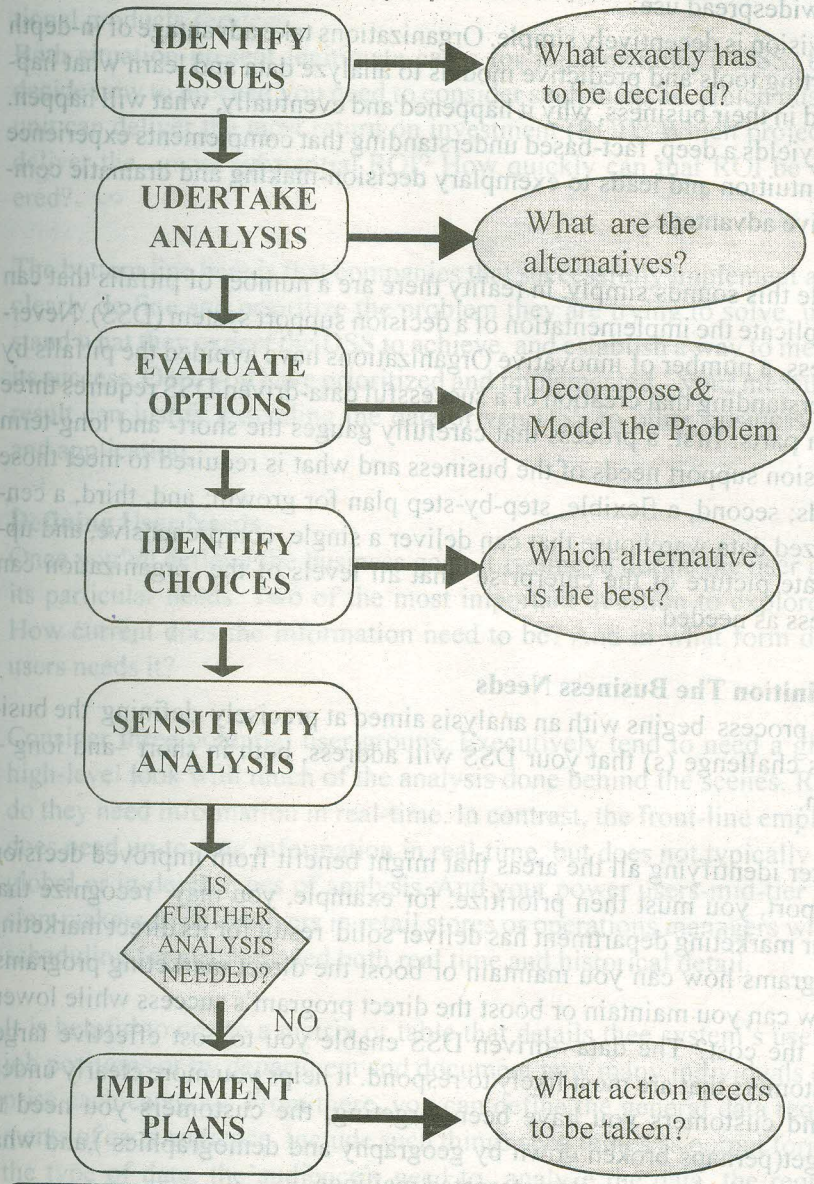
Decision has been defined as a judgment or choice between two or more alternatives, and arises in an infinite number of situations from the resolution of a problem to the implementation of a course of action. Leaders of people by definition must be decision-makers. It has also been defined as the conclusion of a process by which one chooses between two or more available alternative courses of action for the purpose of attaining a goal(s). in other words, a decision is simply a selection from two or more courses of action. The process is called Decision Making.

Leaders As Decision Maker

A decision a choice between a variety of alternatives, and a decision maker (Leader) is whosever makes such a choice. A decision can be made instantly but more often involves the decision maker in a process of identification, analysis, assessment, choice, and planning. To arrive at a decision, a Leader must define the purpose of the action, list the options available, choose between the options, and then turn that choice into action. Decisions and the process of decision-making are fundamental to all management processes-just as they are to everyday life. The various types of decision a leader has to make include Routine, Emergency, Strategic and Operational.

Deciosion Making Processes

In reaching any good decision, the decision makers usually pass through a process known as Decision Making Process. It involves various stages. The stages are diagrammatically represented below.



Analysis of Decision Process (Fig.1)

Data-driven Decision Support System

The concept of an interactive computer-based system that helps organizations make better business decisions has been around since computers came into widespread use.

The vision is deceptively simple. Organizations take advantage of in-depth reporting tools and predictive models to analyze data and learn what happened in their business, why it happened and eventually, what will happen. This yields a deep, fact-based understanding that complements experience and intuition and leads to exemplary decision-making and dramatic competitive advantage.

While this sounds simply, in reality there are a number of pitfalls that can complicate the implementation of a decision support system (DSS). Nevertheless, a number of innovative Organizations have avoided the pitfalls by understanding that creation of a successful data-driven DSS requires three main parts: first, a process that carefully gauges the short- and long-term decision support needs of the business and what is required to meet those needs; second, a flexible, step-by-step plan for growth; and, third, a centralized data warehouse that can deliver a single, comprehensive, and up-to-date picture of the enterprise that all levels of the organization can access as needed .

Definition The Business Needs

The process begins with an analysis aimed at precisely defining the business challenge (s) that your DSS will address, both in short –and long – term.

After identifying all the areas that might benefit from improved decision support, you must then prioritize. for example, you may recognize that your marketing department has deliver solid result for its direct marketing programs how can you maintain or boost the direct marketing programs. How can you maintain or boost the direct program's success while lowering the cost? The data –driven DSS enable you to cost effective target customers that are most likely to respond. it helps you more clearly understand customers you have been targeting, the customers you need to target(perhaps broken down by geography and demographics),and what you can change to improve targeted mailings.

In another part of the company your customer service department has been struggling to accurate, up-to-date information on computer screens at the call-in center. Here, you are hoping the data-driven DSS can help improve customer service and create opportunities for your agents to offer additional products services.
Both situation present legitimate cases for implementing a DSS, but to decide how to proceed you need to consider such thing as: which business unit can deliver the most return on investment (ROI)? Which project can deliver the most substantial ROI? How quickly can that ROI be delivered?

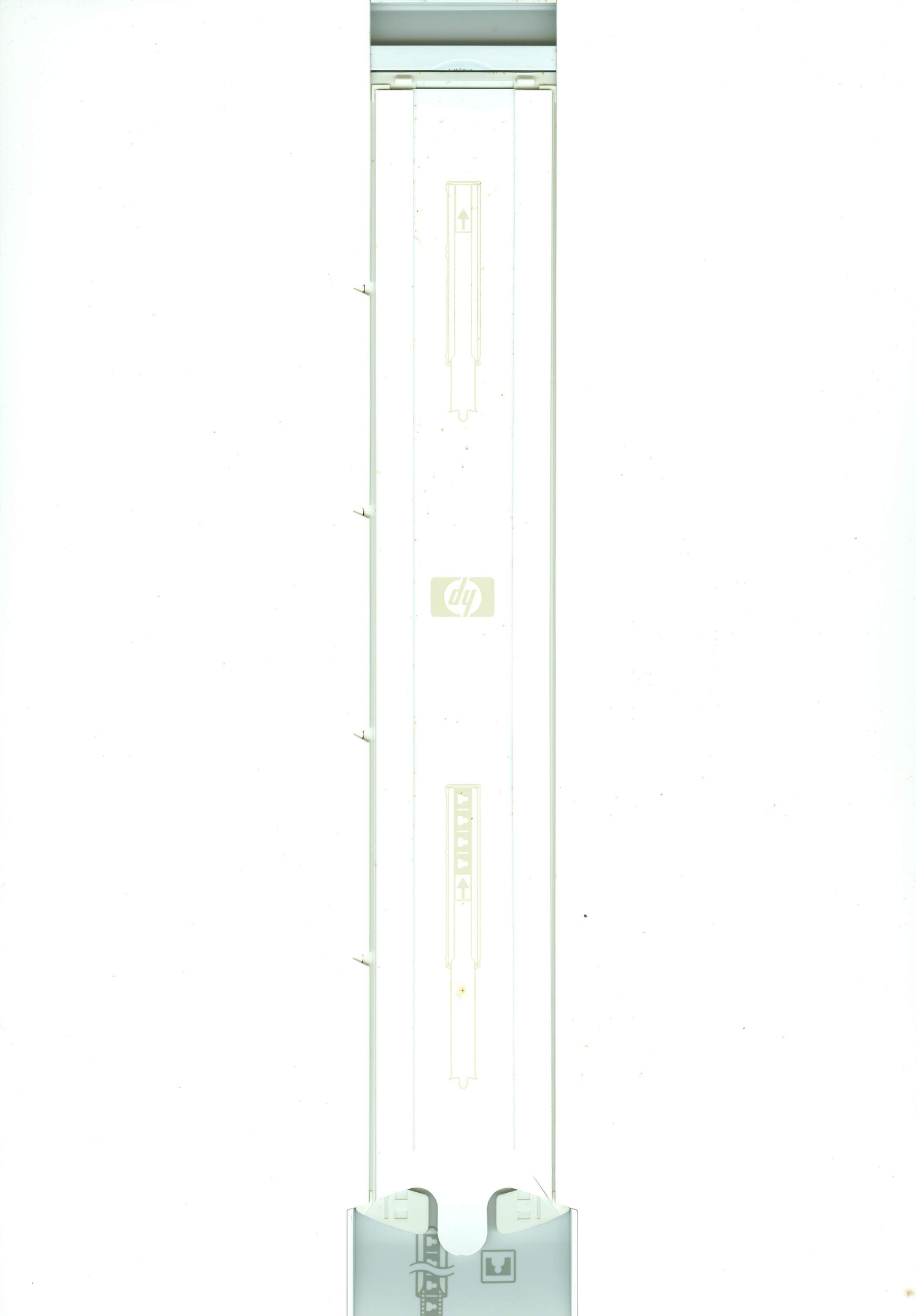
The bottom line here is that companies that successfully implement a DSS clearly de fine and prioritize the problem they are trying to solve, understand what they expect the DSS to achieve, and establish a way to measure its success. Once you have prioritized and implemented – your measurable result can justify extending the data-driven DSS to other business areas and application.

Defining User Needs

Once you've defined the business goal, it is time to define the user group its particular needs. Two of the most important question to explore are: How current does the information need to be? And in what form do the users needs it?

Consider three potential user groups. Executively tend to need a global, high-level look with much of the analysis done behind the scenes. Rarely do they need information in real-time. In contrast, the front-line employee does need up-to-date information in real-time, but does not typically need global or in-depth types of analysis. And your power users-mid-tier decision-makers such as buyers in retail stores or operations managers who do scheduling for airlines-need both real time and historical detail.

It is helpful to create a matrix or table that details thee system's users by job positions or by department and document how many individuals comprise each category. From there, you can define the general data requirements of each audience. Include such things such things as output formats, the type of data, the audience's need to analyze the data, the required frequency of the reports, and how the data will be used.



It is also crucial at this point to consider what thee needs of each user group imply for privacy and security concerns. For example, at a health insurer, some people may need to see only the number of emergency room admission over the last six months, while others may need to see individual diagnoses and treatments. The system must be designed in such a way that it clearly identifies and provides access to those who need the selected information and those who should be denied access. This too should become part of your of matrix.

Defining The Data Needs

The third step is to evaluate what data you will need for the system, which involves creating a model that will describe all the data you will need to address the business problem you are trying to solve.

Data Sources: Let's assume you are trying to create a direct marketing campaign for a new life insurance product. You know that at the least you want to be able to see your prospective client broken down by age, income, and their current life stage (for example, whether or not they have recently had children.). once you've identified the data you'll need, you can map that data against the data elements that currently exist in your environment- and identify where those element exist. You may find that you are not collecting some data you need and so will have to start collecting it. Then you can determine contributing factors such as: how many sources are involved? What type of data is contained in each source and in what formats? How much data each database contain (the number of tables and columns available for query purpose)? Are these databases snapshots at a point in time or are they online in real time?

You will need all this information to determine your strategy for loading data into the DSS. Which data gets loaded first? Does all the data need to be refreshed simultaneously? You need to look holistically at the source information to createe your data loading strategy.

It is also important to remember that as you identify common data fron multiple source, you much plan to integrate it into the single data ware house so that you have a consistent view of the same data. This may re quire data cleaning or data transformations.

This consistent view of the data is crucial because so often a data-driven DSS project can be tripped up by bad or inconsistent data. When the entire user group is working from the reliable and up-to-data information, they make better, more aligned decisions across the board and get the most out of the information you possess.

Data Access: Getting thee maximum return on information, of course, is the ultimate goal of data-driven DSS. It's encouraging that the potential to achieve that maximum return has grown with the emergence of powerful analytical tools and applications that provide access to data in a number of ways- and which deliver important new business insights.
To get the most out of these tools they must connect to a database that is optimally configured to handle multiple, concurrent queries and to keep the data accurate, up-to-data and consistent for all of the system's users. An enterprise data warehouse provides those qualities in the most efficient and cost-effective way.

Gap Analysis To Action Plan
Having identified the business needs, the user needs, and the data needs, you can now compare your findings to the existing environment and determine what gaps you will need to fill.

The gap analysis should lead to a step-by-step action plan that addresses both short-and long-term needs. You need to identify priorities and develop strategies that include a description of initial investments as well as pilot projects upon which the entire DSS can build.
One common problem in the planning phase id that IT projects are not well-defined. This leads to unmet expectations, cost overruns and a perception of limited success which translates into not getting an adequate return on investment. It is critical to spent sufficient time planning to avoid these pitfalls.

Ultimately, building a flexible, scalable system that keeps business intelligence flowing and that can respond to ever-changing business needs is thee mark of an effective data-driven DSS. A careful, step-by-step development process tailored to the needs of your business- with an enterprise data warehouse at the heart of the solution- can deliver ongoing competitive advantage.

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