

# Decision Support System: A Step towards Improved and Efficient Decision Making in Government Organization

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## -----ABSTRACT-----

DSS is a broad area of research and practice. DSS aims at helping a non technical decision maker to analyze, manipulate and evaluate the complex factors of a problem before arriving at a decision. It supports decision makers in evaluating various alternatives and selecting the most optimum alternative. Organizations having no IS facing problems of information overloading and information dispersion. They could not make effective decisions. DSS is a technique that supports heterogeneous decision making environment. It is a combination of user interface and database. This paper provides a proposed web based DSS for an electricity Distribution Company(DISCOM). Most of the routine tasks are now in digital form in many government organizations. This proposed environment provides a future view of G2C and internal organization task for the connection requisitions from the customers. This paper is an attempt to highlight how DSS has proven to help in efficient and effective decision making in government organizations and how top management can control its other management people effectively.

**Keywords – Information System, Information Technology, Decision Support System**

## 1. INTRODUCTION:

DSS is an important field of IS research and practice.

There are so many relevant issues of DSS, but it is at a junction where the future seems to be promising with a lot of hurdles. May be IS research is declining, but in any organization IT is growing significantly. Use of Information Technology is increasing day by day in industries.

Information plays a major role in any organization. The success of an organization is also depends on the quality of Information and use of computer makes that information more effective and efficient.

When the decision making process becomes more important then DSS becomes vital. Herbert Simon Model represents three phases of the decision making process, i.e. 1) Intelligence 2) Design and 3) Choice [3, 4, 6].

Early 1990's a major change in technology occurred, i.e. mainframe based DSS are now converted to client server based DSS [8].

Developing a DSS for any organization is being a challenging task. Many systems fail either at the time of development or after implementation [9].

DSS is not an expert system where man is replaced by the machine. DSS is only to support the managers can incorporate their personal experience to improve the effectiveness of the decision [8].

Decision making is being global now-a-days, so its global scope requires exchange of information and knowledge sharing. Business Intelligence Systems are used to collect, integrate, analyze and make data available to all [11]. Having the growing complexity and uncertainty in decision making, managers have to use quantitative models to support their decisions [12]. These models help non technical managers through some easy steps. There are 5 categories of DSS- 1) Communications-driven DSS, 2) Data-driven DSS, 3) Document-driven DSS, 4) Model-driven DSS and 5) Knowledge-driven DSS [1, 12, 13, 14].

Due to IS and technology, businesses have the capability to accumulate huge amounts of data in large databases, so that a vision of opportunity and challenges provide competitive

advantages [15]. A few years ago, web application had a low standard user interface, but now client-server decision support application with databases provide a better user interface [14]. IT platforms are changing in web and internet technologies [9, 10, 14].

`Semantic and casuistic [11].

Paper [13] says that DSS is a broad area of research. It is an interactive Computer Based System, intended to help decision makers. It enhances a person's ability to make decisions.

Customer Relationship Management is another application of DSS, which plays an important role in the customer centric environment. It focuses on the interface to the customer and strategies to manage customer interactions. A systematic methodology that uses technology manages marketing knowledge and supports marketing decisions [14].

The DSS are the specific class of interactive Computer Based Information System that support decision making and help decision makers. A web based DSS means a computerized system that delivers information using a browser like Netscape Navigator/Internet Explorer. It is synonymous with an intranet and an enterprise wide DSS that supports a large group of managers in a networked environment [7, 9, 10, 15].

## 2. PROBLEM STATEMENT:

The researcher has proposed the study on "DSS is a tool for making efficient and effective decision in any government organization" with respect to electricity distribution company Jaipur Vidyut Vitran Nigam Ltd. Under The Government of Rajasthan (GoR). The selected company (JVVNL) is a distribution, Utility entrusted with the distribution of power in 12 districts of Rajasthan. It caters power to more than 38 lakes consumers, be they be domestic, non-domestic, small/medium/large industrial or agricultural consumers.

After preliminary study it was felt that there should be a web based DSS model, which can interact directly with consumers as an application of E-Governance. So that many problems related to connections can be solved. Reporting system could be improved at different management levels. The existing system is not able to interact with customers through the internet; they cannot give their requisition for connections online. The new model will be helpful for their internal staff also as for data collection, reporting and assigned work. In existing system, there are many problems like corruption, customers may

wait for their task unnecessary, lack of proper work process, lack of reporting and status checking system, lack of data management, file management system, inventory problem etc.

The rapid advancement of the Internet and web technology have strongly focused companies to redesign their business models, process and information infrastructure in order to sustain in a competitive environment. The ways of conducting business have changed substantially [16].

## 3. DECISION SUPPORT SYSTEM:

DSS is a class of the IS which is a computerized system that supports decision making best option among various alternatives [1]. Paper [2] says that DSS lies in IS discipline. It supports and improves managerial decision making process.

In paper [3] author gives a new name of improved DSS i.e. "Integrated DSS". It says that traditional DSS has some challenges. IDSS overcomes those. This paper also defines DSS as computer based IS which is designed to support solution of decision problems. Now-a-days decisions have become more complex and decentralized, so the concept of IDSS is expected to come, which is more scalable and interoperable in network based business environments.

Paper [4] emphasizes that DSS is a CBIS that helps managers to provide better solutions among different alternatives. DSS is a collection of models, people, procedures, software, database and devices, which helps to solve a problem efficiently.

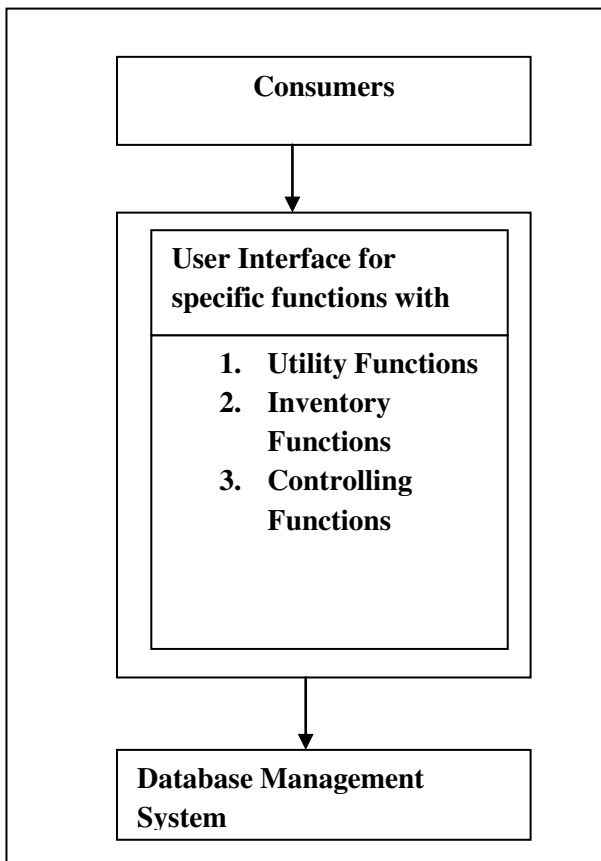
Database Management System, Model Base Management System, Knowledge Base Management System, User Interface System are the components of DSS [3, 4].

In paper [8], the authors define DSS like a helping tool for decision makers to analyze, manipulate and evaluate the multitude of complex decisions. DSS is a special kind of IS which helps decision makers for handling semi-structured and unstructured decision. It also helps in selection one most optimum alternative.

Paper [9, 10] notifies that from last decade new DSS area is focused, i.e. "Web Based DSS". In which DSS runs in a network structure, locally or worldwide.

Business Intelligence System is one of the most popular application of DSS. The concept of Business Intelligence contributes towards improving the quality of decision making, which helps in providing better customer service and customer loyalty. The Business Intelligence System provides information and that information is called knowledge, that can be procedural,

**4. ARCHITECTURE OF PROPOSED MODEL:**



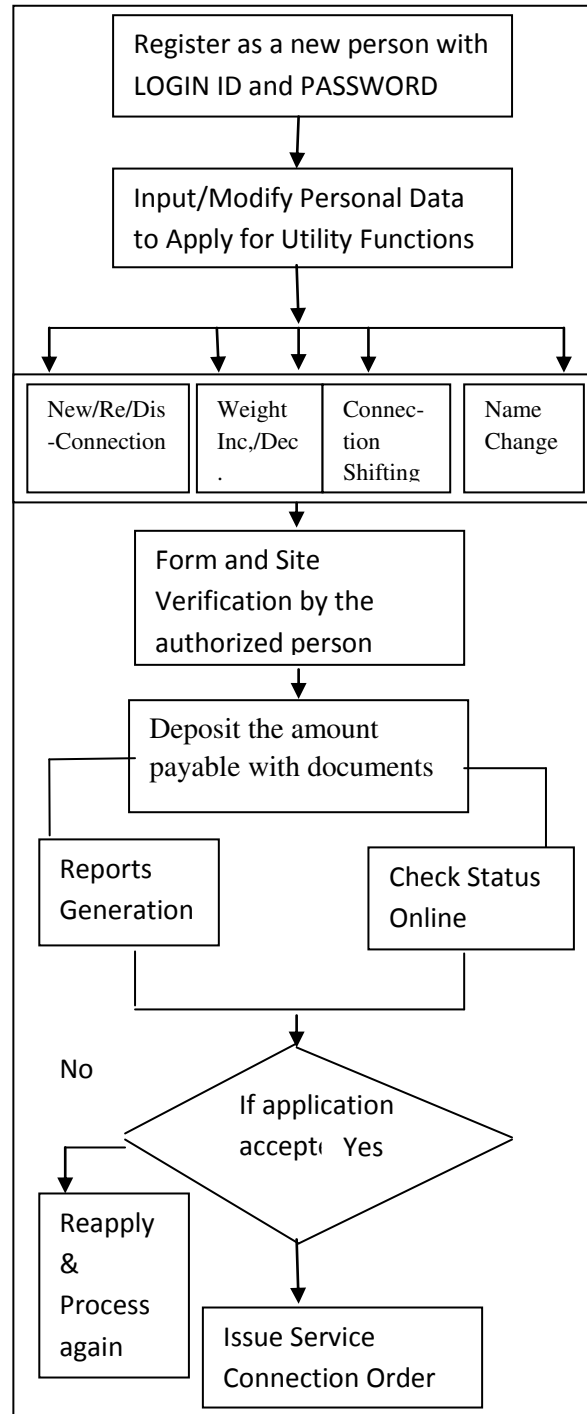
**Figure-1 Architecture of the Model**

In this proposed model, consumers and some internal staff (those are directly concerned with connection process) are focused. By using this model consumer can place their requisition of new connections (whether they be domestic or non domestic) online and can check their status of the application online time to time. Staff can also check their job online from anywhere and update the status of the application after completion the task, i.e. application is rejected or accepted, so that next responsible staff can proceed their task related to the connection.

This model provides three basic functions:- (1) Utility Function:- In utility function, it includes many tasks like new connection, disconnection, re-connection task, payment task, site verification, etc. New connection, disconnection and re-connection include electricity connection of domestic or non-domestic (small scale or large scale industries). (2) Inventory Function:- After site verification and checking the entire formalities, if the connection gets accepted, then store keeper will issues the products for the consumer and at the time of disconnection returned products will be updated in inventory. (3) Controlling Function:- All the functionalities could be controlled by the administrator. Some reports are generated, which could be checked only by the authorized persons. Related reports could be seen by the authorized persons also. As this way controlling on the staff will be possible. The administrator can control VIP connections,

other connections will be followed as First In First Out process. This controlling may be helpful in reducing corruption and bureaucracy.

**5. CONSUMER ORIENTED CONNECTION PROCESS (COCP):**



**Figure-2 Consumer Oriented Connection Process**

This COCP comes with the whole electricity connection process which includes New Connection, Disconnection and Re-Connection. By using this process consumers can now apply for the connections online. After taking a print out of the application consumer can submit it along with the required documents, to the office. The consumer now

can check the status of the form from anywhere and can proceed further by using their Transaction ID which will be given to him at the time of application submission. If the application has an error, consumer can reapply after completing the formalities. This will help with the internal staff also. They also can check their routine assignment online and their site work. Different type of reports will be generated, this will be helpful for managing people. This DSS will be helpful in taking decisions related to work. In this model every employee involved in the process, need to update the status of his daily task, management can check their routine work status by daily reports. The work is streamed line in this manner that one employee will complete his task then the other can proceed. This will give them a force to work on time. These some controlling effects will improve the face of the government organizations. This will work in two manners- First, it will improve the working manner of the employees, their technology knowledge and data handling. Second consumers' technology knowledge will improve and consumers will more aware about their rights.

After the issue of the Service Connection Order (SCO), inventory work starts. The issue and return of the products will be done after receiving SCO. By using Inventory Function management can also have different reports related to stock.

Apart from New Connection, Re-Connection and Disconnection this model also works if a consumer wants to increase/decrease weight of electricity and if a consumer wants to shift his connection and wants to change the name of the connection.

There is a fixed manner to follow up an application as FIFO (First In First OUT), but if there is some necessity then admin can process that application first or in-between.

After all, the process each and every consumer will get a Customer ID, which will be unique. Further consumer can follow up his identity by this ID.

## 6. DEVELOPMENT PROCESS:-

The main task of the COCP is to provide online requisition of electricity connections and to change the manner of work in government organization. Developing a DSS has been a challenging task. Many systems fail because they didn't do their proper feasibility study. In the development process, first we need to check the feasibility. After that, user interface is an important thing to which a developer should be concerned. It provides capabilities for inputting and manipulating values. It should be easy to manage for the novice users. The language and the fields should be easily understandable. It also shows some results or reports. At the time of development, the developer should assess how the anticipated user will use it or understand it. For feasibility, and providing user interface, the designer needs to discuss with decision makers, users of the DSS and with management people. After getting the information for the system, designer should examine what type of information

should be displayed and what can be calculated internally. On which level, information should be disclosed to the operators.

When it is about a web based DSS, then it will be working on a browser like Netscape Navigator/Internet Explorer. Web based means the entire application is implemented using web technologies like web server, HTML, PHP & Database like oracle 10g or MySQL.

With a web based DSS no particular decision support software is needed on the client computer. A web browser and an internet connection to deliver the decision support functionality to the client. The server computer which is hosting the DSS application is linked to the user's computer by a network.

For the development of this prototype, primary data were collected through a well designed questionnaire and conducting personal interviews from the selected respondents.

Prototype system has been developed using the proposed framework and design methodologies.

Figure 3 shows an application form for New Connection. Similar forms will be there for Weight Increase/ Decrease, Name Change and for Connection Shifting. Figure 4 is the next step for the payment receiving. The applicant needs to pay according to his requirement of the KWs/domestic/non-domestic etc. along with the documents required. Figure 5 to 8 are the reports for the administrator from which he can control the employees. He can check that the work is done by the person properly or not and if there any partiality in their working. In figure 5 all new applications can be seen. In figure 6 applications that are not verified by the JEN could be checked. Figure 7 shows the list of connections that are approved. In figure 8 list of rejected applications are there with the reasons of rejections.

The screenshot shows a web browser window with the title 'New Connection Form (EDIT)'. The form is titled 'New Connection Form (EDIT)' and contains several input fields and dropdown menus. The fields include: Applicant's Name (with a 'Print' button and a 'Choose File' button), Father's/Husband's Name, Complete Address, Telephone No., Mobile No., E-Mail, Category of connection, Home, Status of Applicant, Application for (New Connection), and Bank Details (Bank Account No., Bank Name, and Branch/Account Part). The browser's address bar shows 'localhost.com'. The Windows taskbar is visible at the bottom of the screen.

Figure-3



Figure-4

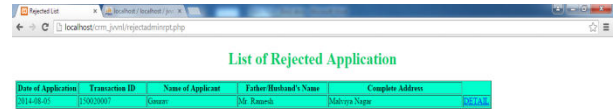


Figure- 8



Figure-5



Figure-6

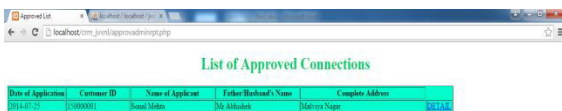


Figure-7

7. Conclusion:-

Government organizations have faced many problems in the absence of an efficient and effective decision making system. They also need DSS so that they can manage their large data easily, have better relations with customers and improve the knowledge of the technology of the employees. There may be some problems in implementing a new system because there is resistance to change. DSS is the utmost important in government organizations to cope with private organizations. These will help in making good relationships with customers too. It will increase work efficiency as well as optimum utilization of the resources. DSS should be more user friendly so that every level of management can use it properly. To get the ultimate benefits of DSS, reliable and timely information employees need to be trained also.

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