Decision Support System for Managers
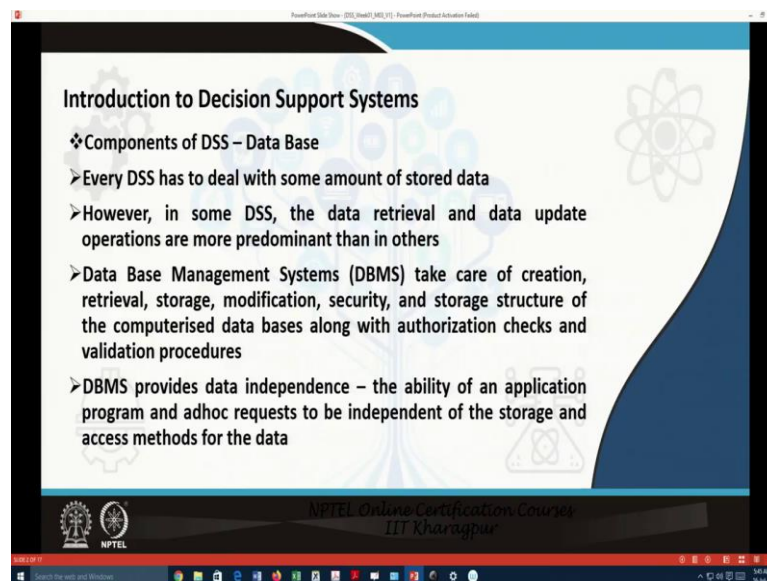**Prof. Kunal Kanti Ghosh**
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Module – 03
Components of a Decision Support Systems
Lecture – 03
Components of a Decision Support Systems (Contd.)

Hi, welcome to module 3 of Decision Support Systems! And, today we are going to continue with where we have left on the subject topic of "Components of Decision Support Systems". Here in we had already discussed that, the primary component is the manager. Next, we have discussed about models ok. And, also we have discussed about the communication devices ok. And, then now we will be talking about the fourth component that is the database.
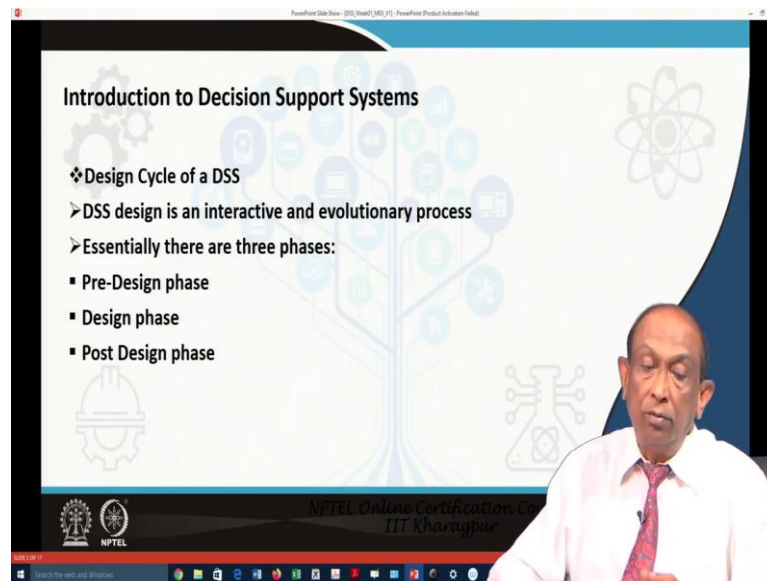
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Every decision support system has to deal with some amount of data which is stored in the systems. Is data is related to the different kinds of input that are required by the models in solving the problems. However, in some decision support systems, the data retrieval and data update operations are most predominant than in others.

Database management systems, they take care of creation, retrieval, storage, modification, security as well as the storage structure of the computerised data bases

along with authorization checks and the validation procedures. Data Base Management Systems provides data independence, what do we mean by that?

The ability of an application program and adhoc requests to be independent of the storage and the access methods for the data. We do not need to know whether the files are random files, index files, or sequential files, there is no need for knowing the access methods for the data. The DBMS takes care of it.

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Now, we come to the design cycle of a decision support system. Decision support systems by its very nature is an interactive and then evolutionary process. Essentially there are three phases in the design cycle of a decision support system. One is the pre design phase, the next is the design phase, and the third one is the post design phase. First, let us concentrate on the pre design phase.

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In this phase, the DSS designer prepares a description of the existing procedures related to a decision area. The decision problem for which a DSS is required is then identified. Then, the DSS designer is bothered about developing the required interface.

DSS designer also must be able to foreseen, that whether there are implementation difficulties related to the proposed design. After all these things are over a cost benefit analysis needs to be prepared, in order to find out that whether the organization or the manager should actually go ahead with the development of this decision support system.

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Because, the expected benefits must be more, much more than the cost, that will be incurred; then only it is wise to going for the development of the decision support system. A decision support system is likely to be successful, if the problem area has some of these following characteristics. What are those characteristics? They are should be a need for managing large amount of data, this is number 1.

Number 2, there must be a need for complex computational and logical tasks to be performed on that data. The third one is that, there should be a need for quick computation and data manipulation. And, the fourth one is a need for judgment in interpreting the results, when managers have the major role and suggest alternative course for processing the data.

So, once again the following characteristics dictate the need for a DSS. What are those? There should be a requirement for managing large amount of data, there should be a need for complex computational and logical tasks to be performed on those data, there should be need for quick computation and data manipulation. And, the fourth one is that there should be a requirement for judgment in interpreting the model output that is the results, and suggest alternative course for processing the data, where the managers have the most important role to play.

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In the design phase, the problem has been identified. In the pre-design phase, is further refined for design purposes. Here in there are three major issues that need to be analyzed.

The first one is what is expected of this decision support system right. The second one is how to know when do we stop this development?

And, the third issue is to determine the priorities which need to be observed in the development of this DSS. What is expected of DSS? How to know? When to stop the development? And, the next one is knowing the priorities that must be maintained in the development of DSS.
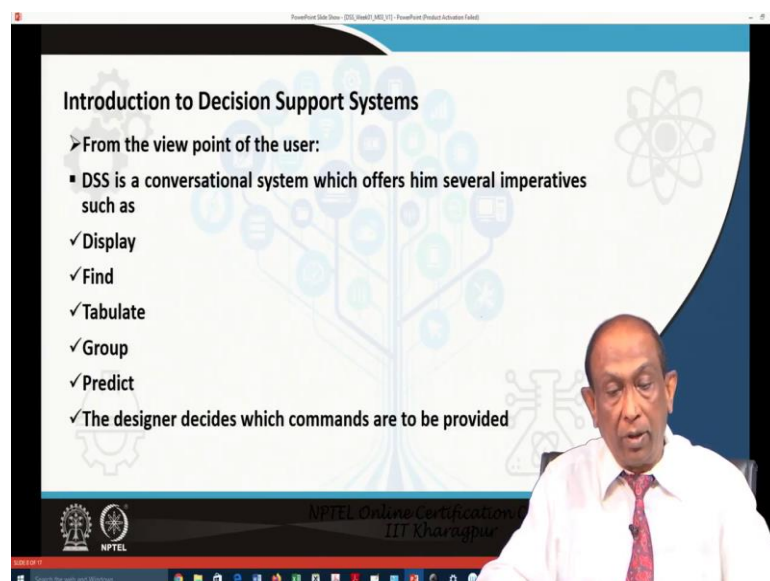
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These three issues are very-very important.

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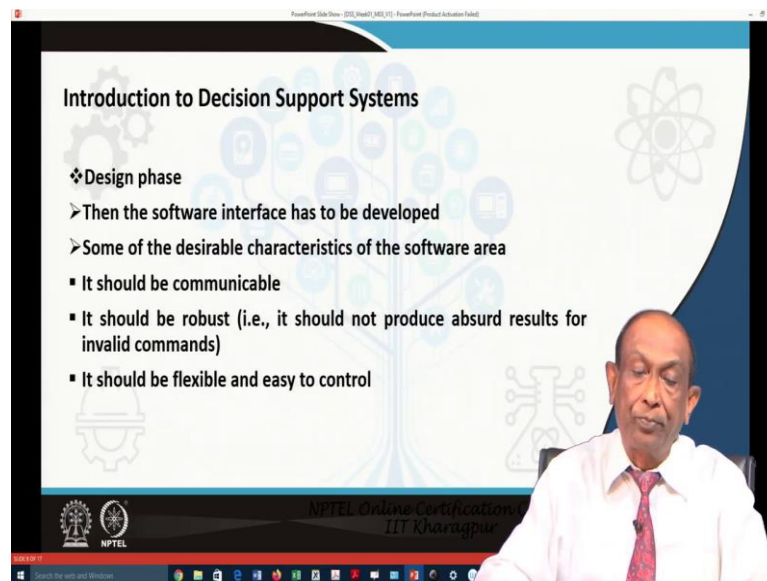
From the viewpoint of the user decision support systems is a conversational system, which offers him several imperatives. Such as display, find, tabulate, grouping, predict. Having known that these are the several imperatives, the designer decides which commands are to be embedded or are to be provided in the decision support system. Knowing those imperatives is very-very important for a DSS designer.

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Next the designer has to develop the software interface. And, the software that will be required must support the following characteristics. It should be the interface should be developed in such a way that it should be communicable, it should be robust, we are already said that it should not produce absurd results for invalid commands, it should be flexible and easy to control.

In the design phase, data management is another important task that poses several problems during the design stage. So, areas that need to be taken care of are what is the data that need to be held in the database? What is the software that will be required to manipulate the data? And, how do we collect that data and having collected the data, how do we maintain that data?

So, data management is the most arduous task in the operation of a decision support system.
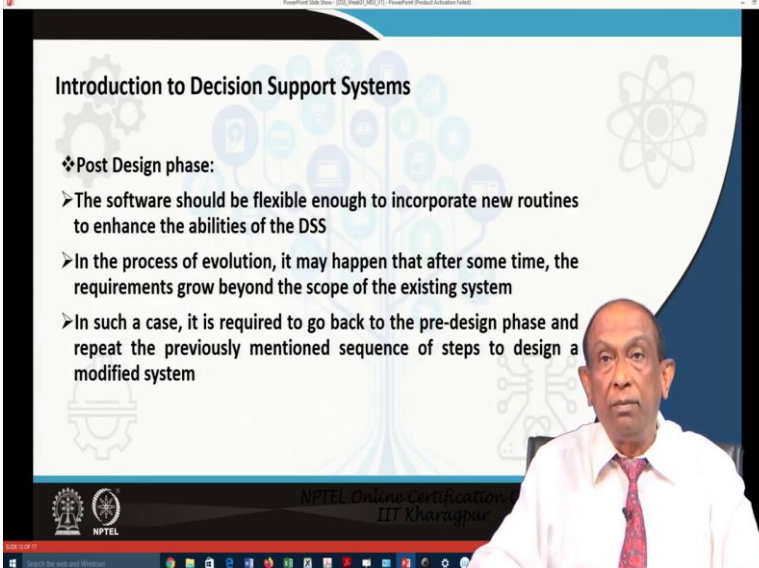
Next we come to the post design phase. So, pre design phase, design phase, and then we are discussing about the post design phase. The system has now been developed and delivered to the user. The system must have certain features that should be useful for the immediate purposes.

Managers begin using the first version of the system, they learn more about the problem and the decision support system, then they suggest extensions and improvements. If they will start using it, while using it, they will also encounter some difficulties, they will also get a clear idea about the problem that they are going to solve. They will suggest certain changes, they will suggest certain extensions and improvements of the system, which the designer has to incorporate.
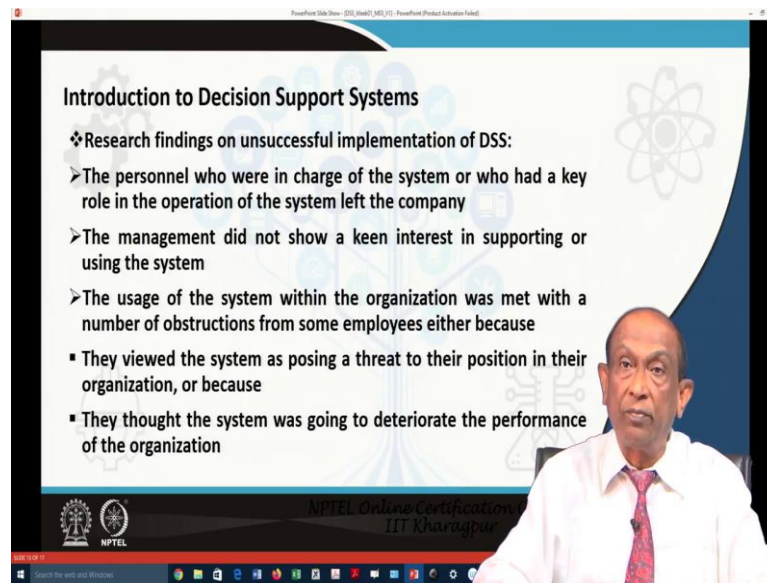
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The software which will be required in the decision support system should be highly flexible to incorporate new routines to be embedded such that the capability of the DSS is enhanced. So, it is an evolutionary process.

And, in the process of evolution it may happen, that after some time the requirements grow beyond the scope of the system, which was initially envisaged. In that case it is necessary to go back to the pre-design phase and repeat the sequence of steps which we have just discussed to design a modified system.

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Now, we will be discussing about the research findings on unsuccessful implementation of decision support system. First point, what has been found is that the personnel who were in charge of the design and development of the system or those persons or users, who had a key role in the operation of the system left the company. And thereby, the implementation of the system became unsuccessful.
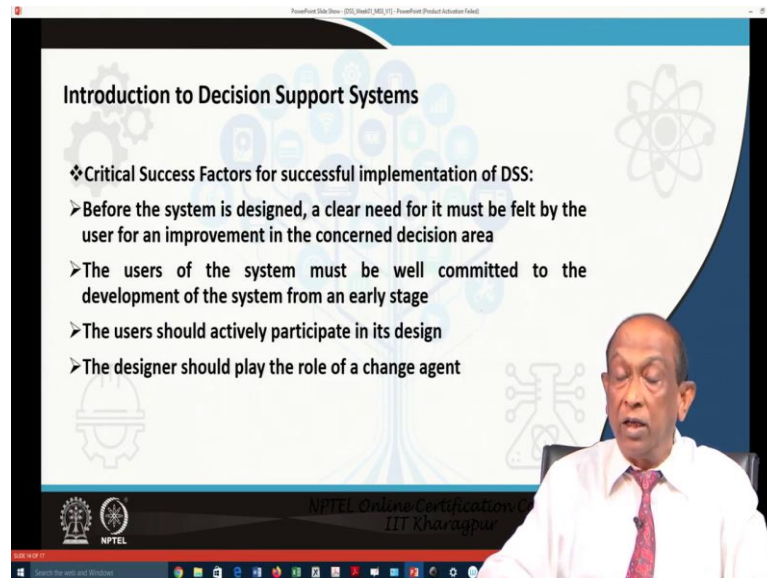
Other reasons for failure in implementation of a DSS are that the management of the organization where the DSS is going to be get implemented, did not show any major interest in supporting or using the system. The usage of the system within the organization was met with a number of obstructions from some employees that is another reason why many DSS have failed in the past.

And, why the employees they create problems, they create obstructions. The sometimes they view, the system as being a threat to their position in the organization. Because, they think that, if the computer system is going to dictate solution for a problem, then the organizations might chuck them out, they may no longer be needed or their importance might be curtailed.

So, employees they really do not accept the implementation of such systems, because they feel threatened. They feel that their role will no longer be needed. And, sometimes they create problems in the sense that they try to convince others that the system is going to deteriorate the performance of the organization.

So, these are some of the findings why decision support systems, many decision support systems have failed in during or implement during implementation.

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So, what are the critical success factors, for successful implementation of a DSS? Because see we have deliberated with the various reasons why decision support systems have failed. Now, you must know, what are the critical success factors for successful implementation of decision support system?

Since, the first point is that before DSS is designed, developed and implement it, the organizations or the users of those organization of this DSS must feel that this decision support system is required. A clear need for that decision support system must be felt by the user for an improvement in the concerned decision area.

Until and unless, the managers, or the users, who will be using the decision support system they feel the need for it; the acceptability of the decision support systems will not be there. Next, there must be commitment from the users of the system, for the development of that system, and that commitment and involvement of the users must be there right from the beginning.

That means, committed users must be involved from an early stage for DSS implementation to be successful. Because, if they users they get involved right from the beginning right at the early stage, then they will be able to specify the requirements of

from the system. They will be able to appreciate and understand the problem. And, the involvement of the users should not only be there in the requirement analysis stage, but also users should actively participate in the design process.

Because during design also, the DSS designer might require the help of the user for constructing or formulating an effective algorithm for solving those problems. And, in here the role of the designer should be seen as a change agent. But, the actual users must play the primary role in not only specifying the requirements from the system, but also in the design and implementation.

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The designer should view his job as if he is delivering a service rather than a product, because if the designer's mentality is that he will just deliver a product and you know his job is finished. Then those kind of decision support systems will never be acceptable, never will they be successful. Designer should view his job as consisting of delivery of a service remember, service rather than a product.

The designer must be concerned more with the usefulness of his service rather than technical perfection. Because, this is very important sometimes some of the system professionals, or some of these designers, they get engrossed with achieving technical perfection or achieving some thrill out of developing the system. He tries to utilize his own knowledge; he tries to get his own satisfaction, in making the system technically perfect.

But, not bothered about whether the system is user friendly, whether the system we will serve his intended purpose or not, they are not bothered about the usefulness of this service. If that is the attitude then DSS cannot be successful. So, designer must be concerned more with the usefulness of the service that the decision support system is intended to provide, rather than the technical perfection of the system.

Next the user and the modeler, they should have understanding of each other's point of view and areas of expertise. They must compliment each other's capabilities, each other's knowledge, each other's area of expertise. And, these observations hold for any modelling job or any information system design effort and particularly most important for the design of a decision support system, because the designer and modeller must compliment each other's area of expertise rather than competing.

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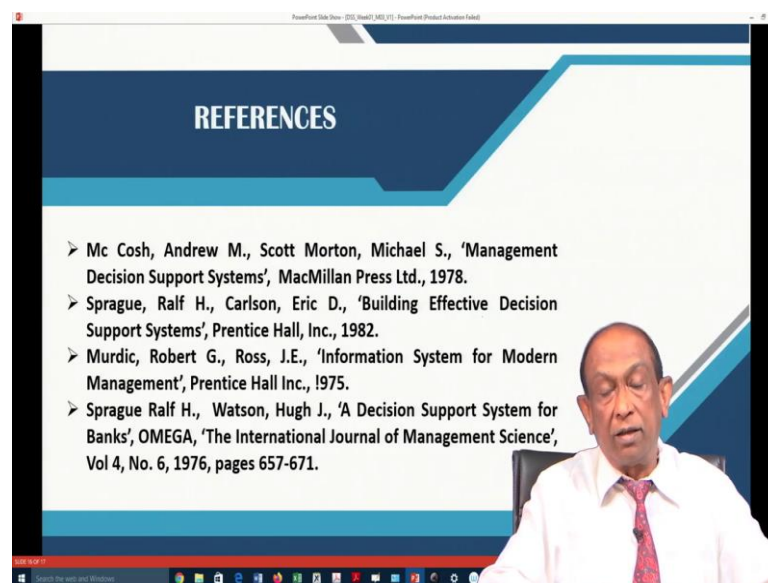
Thank you all! We will go to the next module; these are the references again that I have used for this particular one.

Thanks a lot!