Management Information System
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Lecture - 06
Decision-Making Process

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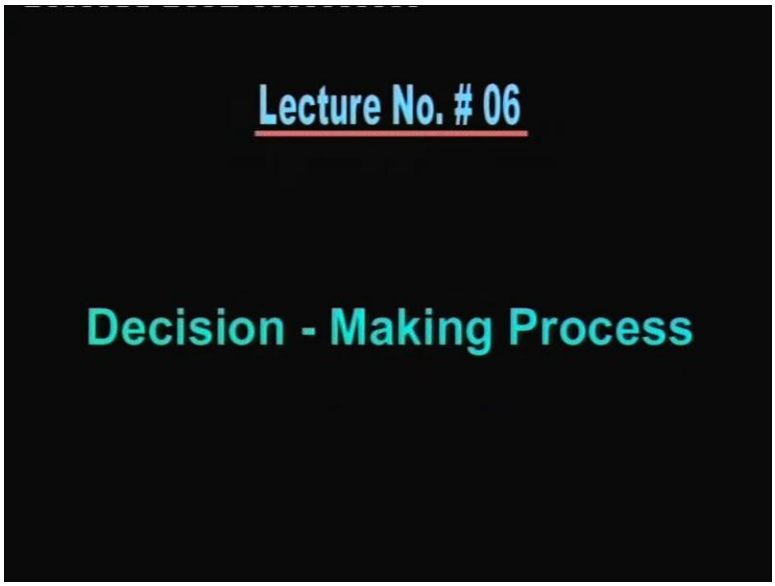

Good morning everybody. Today let us begin the decision-making process.

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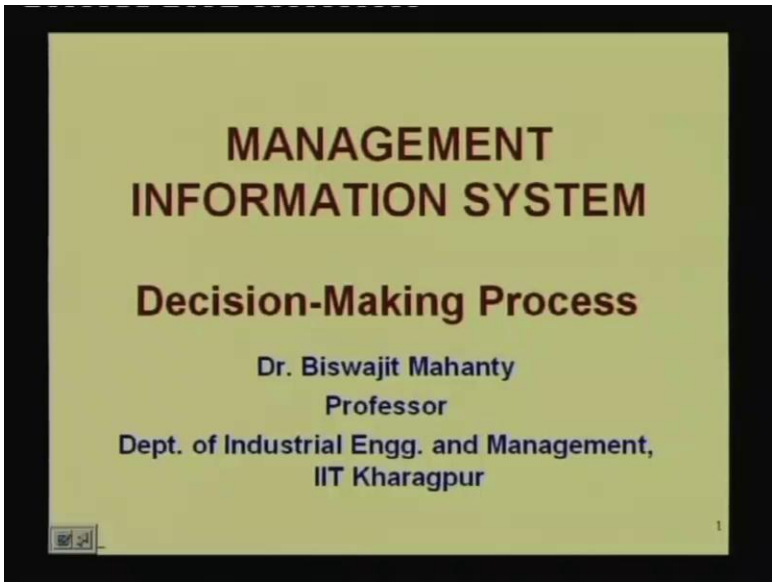

And specifically in this if you recall in our earlier lecture, we are discussing about the information processing biases. So you complete that lecture on information processing biases. Then we shall see specifically the details of the decision-making process.

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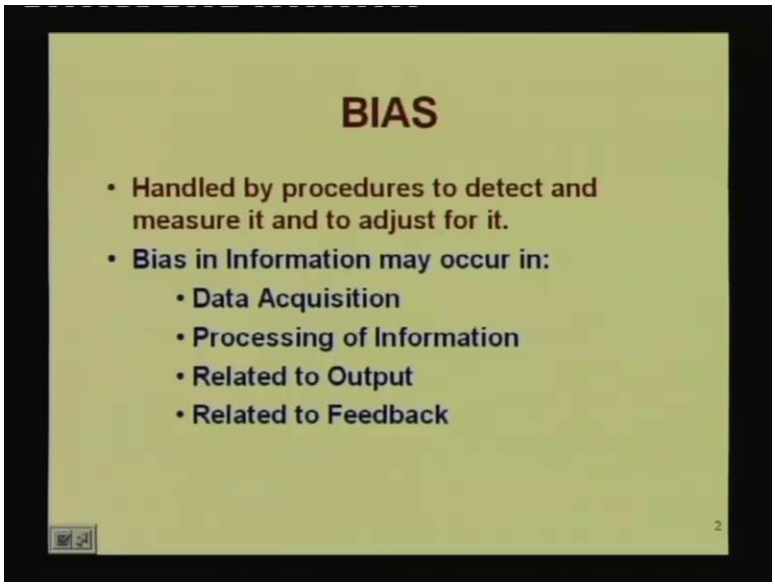

Now as we have discussed on the previous day bias is handled by procedures to detect and measure and to adjust for it. Now bias can occur in data acquisition processing of information related to output and related to feedback.

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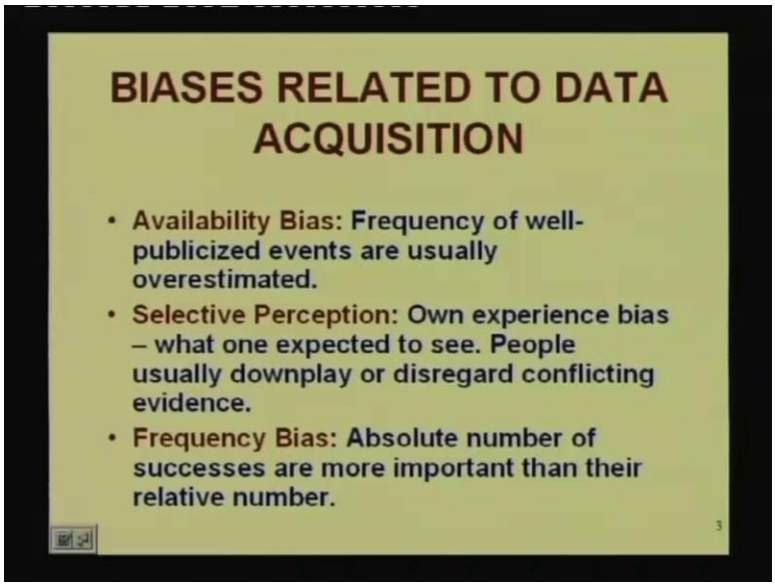

Some of the data acquisition biases we have already seen the like availability bias, frequency of well-publicized events are usually overestimated. Selective perception own experience bias what 1 expected to see. People usually downplay or disregard conflicting evidence. So basically we perceive certain things and we do not perceive certain other things. So our perception is sometime selective. Frequency bias absolute numbers of successes are more important than their relative number. So these are some of the biases due to data acquisition.

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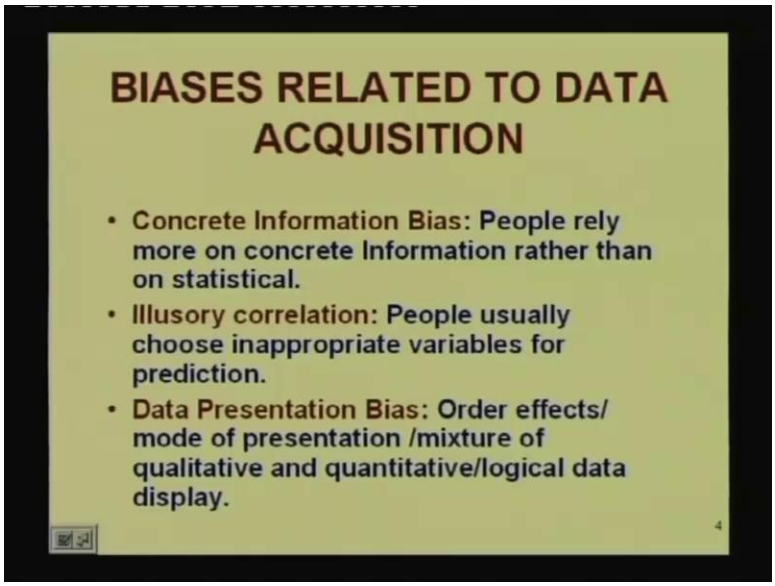

Other biases due to data acquisition are concrete information bias people rely on concrete information other than on statistical. Illusory correlation people usually choose in appropriate variables for prediction. Data presentation bias due to order effects mode of presentation mixture of qualitative and quantitative data then logical data display all these are essentially biases related to data acquisition.

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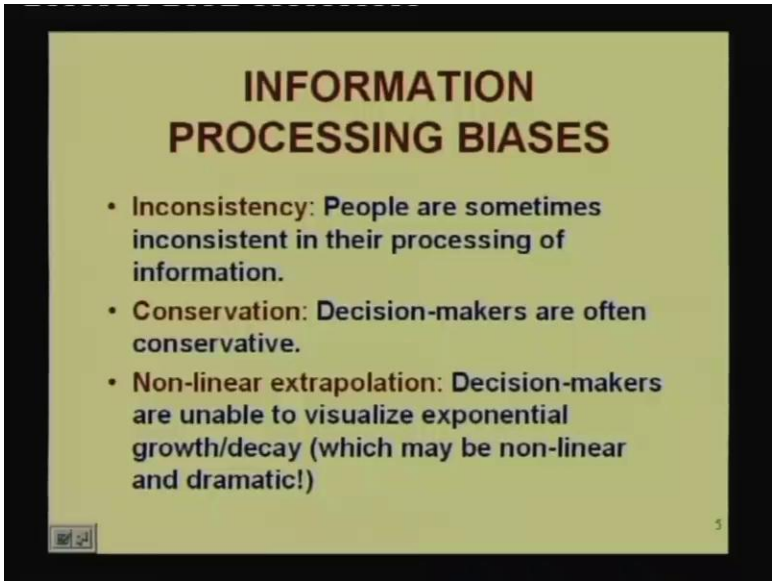

Now after that we had discussed about biases related to information processing. Now, first of all inconsistency people are sometimes inconsistent in their processing of information. So you have some information on the basis of that you have to take location decision. Now may be the same person if he does next time the same information processing, that is decision making a location decision he may be making a different decision because if he is using a method by factor rating type of method where he is giving weights to different criteria he may choose a different sets of weights and therefore his decision may actually be different. Conservation decision makers are often very conservative.

Conservative in the sense that suppose you want to make a drastic decision which is a departure from the existing practices maybe you are not able to take such a decision. Non-linear extrapolation decision makers to unable to visualize exponential growth or decay which may be non-linear and dramatic. So we had given example of population growth that is 100 years from now. The population will be like from today's if 35 years is a doubling time we could see that it could be as high as 8 times in 105 years. So this is difficult for people to perceive or even guess so sometimes people give a very conservative estimate of this kind of decisions.

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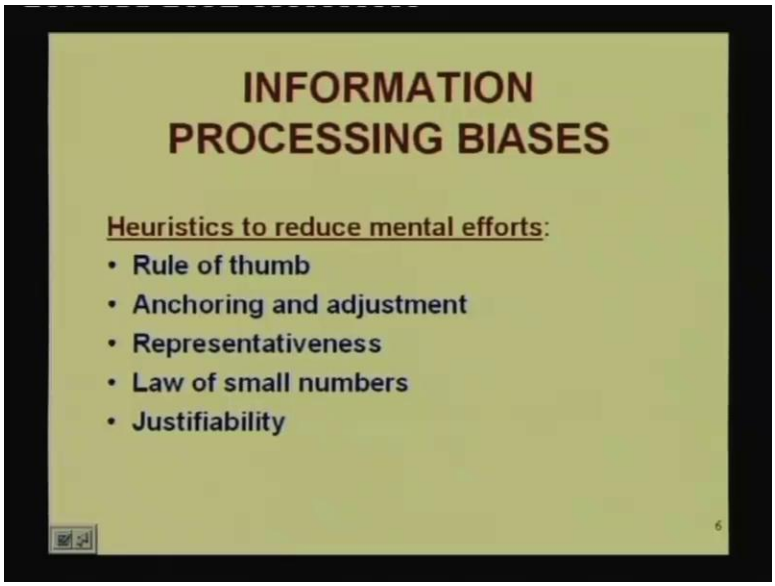

Then heuristics to reduce mental efforts so there are certain heuristics like rule of thumb anchoring and adjustment representativeness laws of small numbers and justifiability. So these kinds of heuristics to reduce mental efforts are quite very much present when people do information processing something like rule of thumb. Basically you use some sort of a measure by which may be by an easy calculation you calculate what should be the particular decision right. So basically if you say that okay there are 5 factors and there are lots of weights of all the different 5 may be you do not take any 1 of them you just take the median value.

So it is a kind of rule of thumb anchoring and adjustment you have an anchor and adjust your values around that anchor I mean later on we shall see an example of anchoring and adjustment. So if a person may have to make a decision in a complicated scenario instead of trying to go into the details of the decision-making an easy way out is to see how people have done what decisions people have taken in previously under the same situation. So take that decision as an anchor and make adjustment adjustments to that anchor. So this kind of heuristics has been used. Representativeness that instead of evaluating all the different decision-making alternatives you just take a representative.

One law of small numbers essentially what happens when you are handling with small numbers you do not understand the variance, you do not understand the variance basically what happens that you know you take your decision on the basis of a small set and you think your decision is right. But what happens because you have taken a small set the variance is very high. So if you if you just flip to 1 coin twice and you get head both the times it is easy to say that the coin will always turn out head because you have got only 2 times you have done you got it 2 times. But who knows in the next few tosses the situation may be totally different. Then justifiability people often try to justify the decisions that they make and through this justification they do not like to see other options which might be also available.

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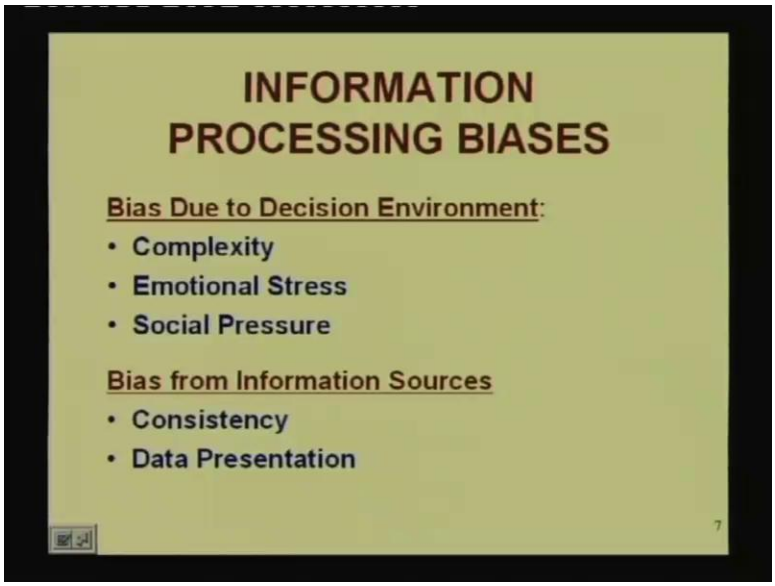

Bias due to decision environment. Now usually what happens that people when they take a decision the decision environment may be quite complex there may be lot of emotional stress. There may be social pressure. So people are really not ready to make their decisions in the most you know favored way or in the best possible manner. So it is usually true that in an organizational setup often the situation is very complex. It is not really all the time possible to have your rationality all the time.

You can you can be biased you know that a particular unit is not performing well and therefore the most logical conclusion is you know closer of this particular unit. But because of emotional stresses, because you see that lots of people are involved and positions are involved and social connections are involved. So you tend to not take a hard decision but probably that hard decision would be better for the organization right. Sometimes there are complex issues and therefore your decision may actually be biased and the biasness comes from the considerations of this kind of decision environment.

Biased from information sources, now the information source may not be consistent and there may be data presentation bias available in the information source itself. So what happened? Because of lack of consistency similar kind of data is you get 1 kind of data at 1 point of time

may be at another instance you get a different type of input information source. So therefore your information processing may actually be biased.

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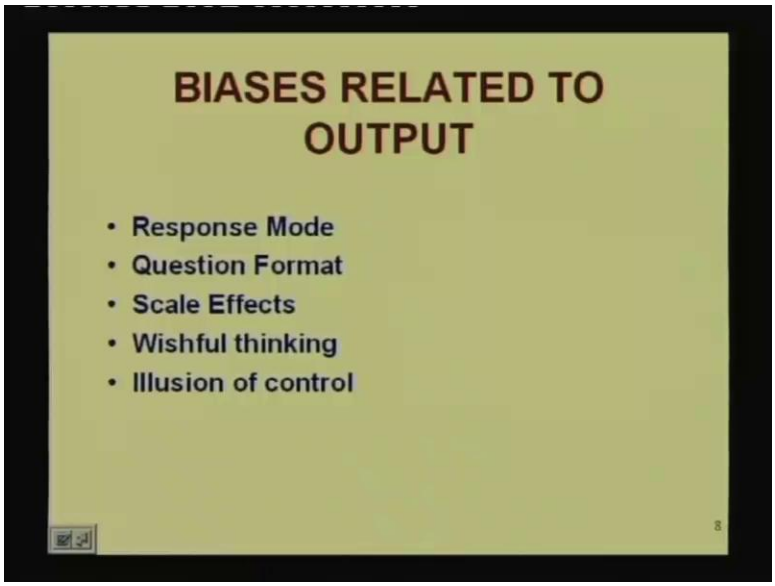

Now biases due to output some of the important once are response mode. Then question format, scale effects, wishful thinking and illusion of control. So what actually happens that when an output is given to the ultimate recipient, then certain biases can actually come that is you know the question format and response mode essential idea here is that the output is given in a pre-specified format or in a pre-specified response mode. And therefore the output does not convey the full meaning that was expected or in the expectation of the user. So this is a kind of bias.

Second kind of bias could be scale effect the scale a third type the scale effect could be again you know. If you choose the appropriate scale and choose a very small kind of scale and you can actually show the variations which are quite high to be quite negligible all right. So this sort of biases can actually be included while presenting output. Sometimes what we are presenting as output is may not be an output it could be a wishful thinking. That means we are really not got the results that we desire.

But you know we wish that it should happen that has come out and the data is merely a formality to move around that. Illusion of control, that is also quite possible that is a situation which has got out of control the limits have actually crossed and we still think that by tampering or by controlling by changing certain parametric values. We can still show that the situation is actually under control. Say some example suppose in a quality characteristic you are actually drawing the quality limits and your results are actually shifting towards the control limits, it has not crossed the control limits yet.

But you may say that no the raw material which we received has got some problem and may be the good workers are not present. So, you can always put forward some kind of logic and you can say that no everything is under control but these are only aberrations. But really speaking the control has might have actually shifted right. So these are the sometimes the biases that may actually be exercised when we are dealing with outputs. Now biases related to feedback.

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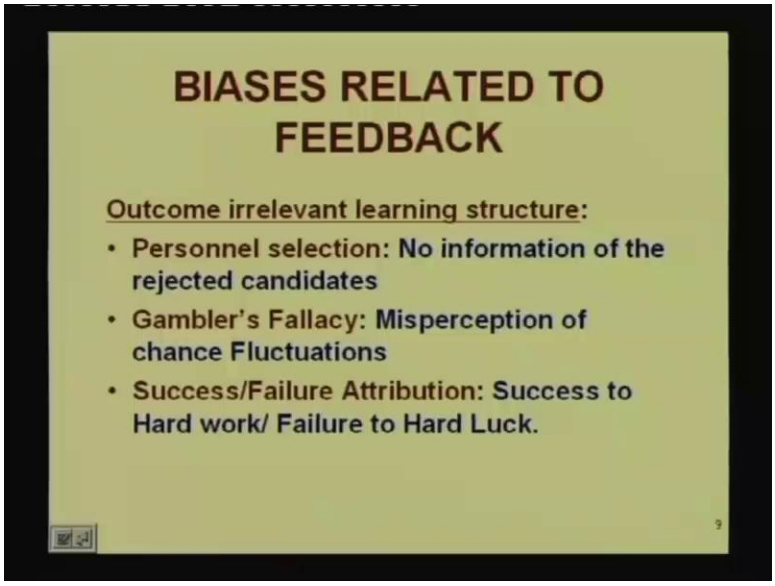

What happens this is an important thing that is outcome irrelevant learning structure. This is a very, a very, very interesting case say personnel selection no information of the rejected candidates are available with us. So what happens the people that we are selecting in an interview and later on we find that they are doing quite well? So we tend to believe that we have

selected the right kind of people. Because the people we have selected are quite good and they have performed quite well and therefore our selection procedure is really fantastic. But what about the people that we have actually rejected, may be some of these candidates whom we have actually rejected are quite good themselves.

So we have really lost and we have not seen those rejected candidates or their performance. So we think that we have learned through a method of iterative process that we have interviewed some candidates and we have selected the best 1. But really speaking we really have no feedback we have no feedback on the candidates who are actually rejected. So this is the basically an outcome irrelevant a learning structure. Then, Gambler's Fallacy; misperception of chance fluctuations. Sometimes it is all we have seen that we do not sometimes see the effect of chance fluctuations and we misperceive them right. So if we get something like 3 heads in a row we expect the fourth 1 to be a tail because anyway head or tail has a 50 percent probability.

But since every toss is an independent effect the independent activity or event, the fact is the fourth 1 can again be head or tail. See there are lots of these gambling games where you have to really select 1 card out of twelve this and when you are selecting 1 card out of 12, it is all the time possible to predict that okay. This will be the thing, then history this is happened, so next 1 will be this. But if it is a true probabilistic process if each card is equally likely then all these you know the past data what you call analysis has no meaning. The very fact that Markov is a memory less process and these are all Markov processes.

So essentially in any probabilistic situation where the outcome is probabilistic and the probability is a known the each event that can occur in the given situation depends on the probabilities and does not depend on the past facts. So past what has happened. So that is called the memory less property of Markov processes and many of the gamblers and why gamblers even decision makers in situations where chance is involved do not see, this do not see this and therefore fall prey to or to a particular bias that is if 3 tails have occurred in the past fourth 1 must be head.

Success failure attribution we try to attribute our success to hard work and our failure to hard luck right. So that means we do not learn from our failures most often we think it is because of our luck we have failed and our success is because we have done good work. But in the success also may be there was an equal chance of failure and in the failure also there is a good chance of winning. So until unless we are able to understand this the specific points may be we have not understood the mechanism of success.

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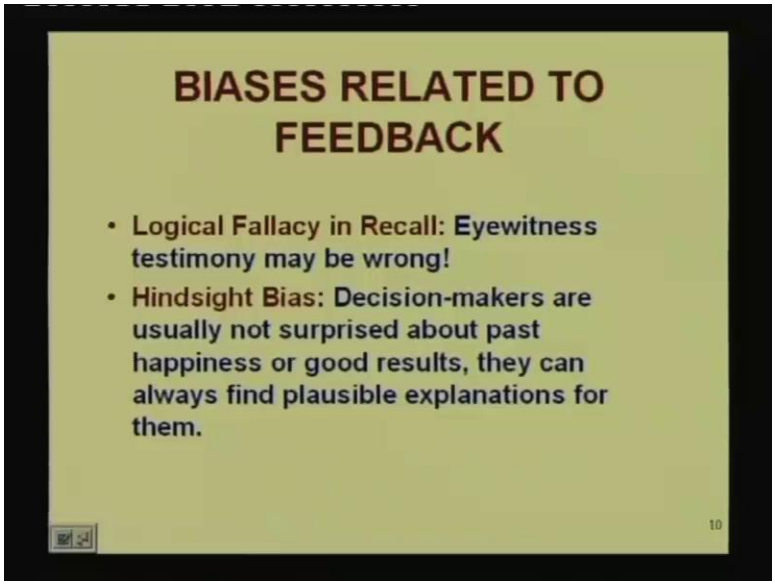

Now logical Fallacy in recall eyewitness testimony may be actually wrong. Because what happens particularly where human are involved although we think that we have been able to recall properly, but it may not be so right. So eyewitness testimony may be actually wrong. So something basically it is like you have seen something, we see something what we want to see so maybe we want to see that this particular organization is not doing well. So naturally we select our indicators accordingly and those indicators we show that this organization is not doing well all right.

So that basically means that when we see something what we see is not really what is the reality? This is one of the very major important points about any kind of system analysis that when we are seeing something are we seeing what is existing or are we seeing something or something of

a modeled which is already in our mind. It is more like you know fitting reality to the model rather than fitting model to the reality right. So this error we make many a time we just fit reality to a model the model that is in our mind. And because of this we fail to understand the existing system.

It is very easy to say that what is there in the existing system. The existing system understanding probably is the most difficult part in any information system environment. hindsight bias decision makers are usually not surprised about past happiness or good results they can always find plausible explanations for them is called hindsight bias that once something has happened we tend to become much more knowledgeable about it and we can always find explanations for why that particular thing has actually happened right. That is called hindsight bias.

So as if we know the causal connections we actually built that is yes the company has failed and the failure is due to this this this this reason. But maybe we what has happened is understanding and causality everything is fine. But we fail again and we fail again and again we will find a will be a different set of reason to be put for our failure next time. So that means we do not really try to see the plausible explanations we just want to be you know having hindsight bias. So these are different kinds of biases that are actually present in information systems. Basic idea is that remove biases if you do not like it. But may be add biases if it is required.

So sometimes we have to add biases sometimes we have to remove them. So basically use biases to your to the best of the organization. So, that is the idea that information processing and information all kinds of information biases are a reality whether you like it or not. Because humans are involved biases will be always there. You should learn to filter biases when you are processing information and many a time a situation may come where we may have to add biases also. But we should know that they are part of reality.

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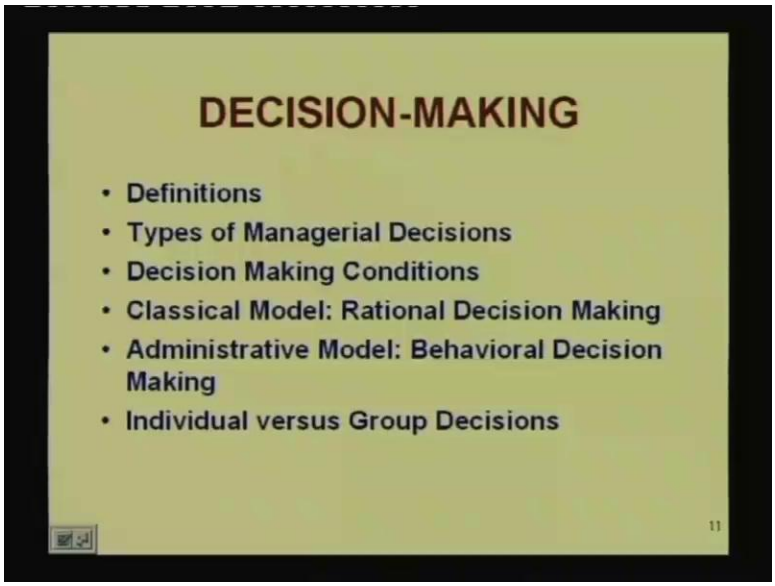

Now let us look at the decision-making process obviously the biases in information is also a kind of decision-making process. Here essentially we would like to see the definitions the different types of managerial decisions, decision-making conditions, then classical verses administrative model of a decision maker where we would like to differentiate between the rational decision-making and the behavioral decision-making. Then finally which is very important to us the difference between individual and group decisions. The group decisions because you see the organizations instead of individual decisions, we often take what is known as group decisions. And group decision-making is very different from individual decision-making and the lunacies says we must understand.

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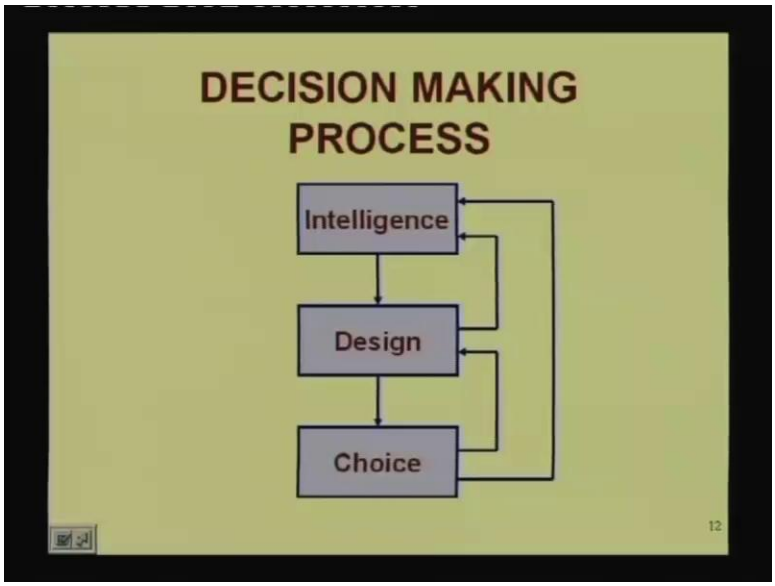

So this is the process of decision-making intelligence design and choice right. So again like in the decision-making process the intelligence is collection of information of all types' right. All that is required in the decision-making process the modeling details the parametric details. Design is design of the alternatives alternative to the decision-making and choice is the choosing a particular decision alternative after evaluating them so it is evaluation and choice. The feedback arrows basically shows that we can always go back from choice phase to the design phase from design phase to the intelligence phase or choice phase to intelligence phase. So all kinds of feedback mechanism is actually possible and basically at any stage whether design or choice, we should be by looking at the kind of decision that we are getting at that particular point. We can actually go back to the previous phase and always come back better equipped. So that is what is the decision-making process inwards.

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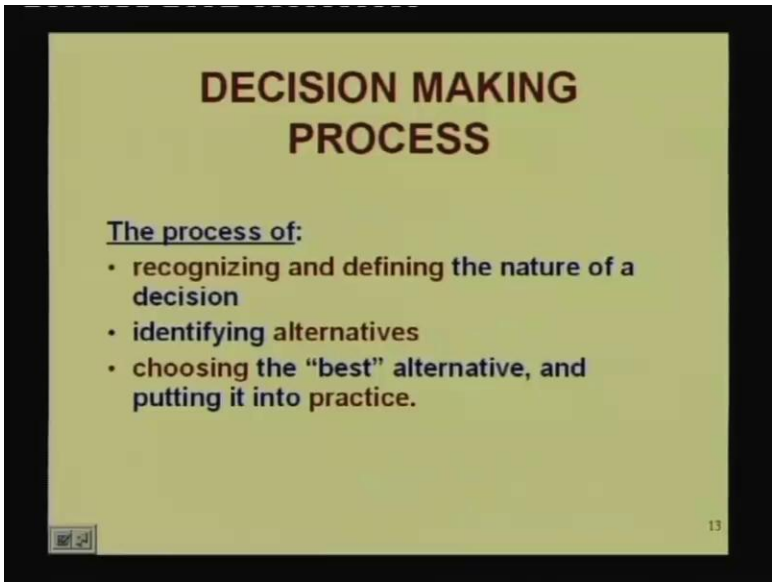

The process is recognizing and defining the nature of decision identifying alternatives choosing the best alternative and putting it into practice. So recognizing and defining the nature of a decision very important and that is possible by collecting all possible data then identifying the alternatives to the decision-making and finally choosing the best alternative and putting it into practice. So these are basically required for a decision-making process. Now there are various ways the decisions can be differentiated 1 such thing is the programmed versus non program decisions.

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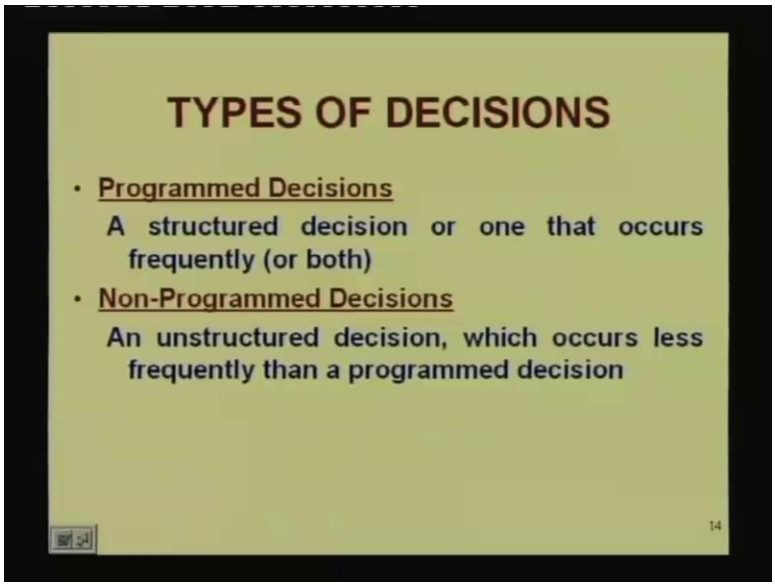

A program decision is 1 where we have a structure decision or 1 that occurs frequently or both. So that is called a programmed decision. A programmed decision is a structured decision or 1 that occurs frequently. Non programmed decision is an unstructured decision which occurs less frequently than a programmed decision. But there is another difference in a structured decision. We have situations where we can actually decide on parameters whereas in unstructured decision we cannot decide on parameters. So the very nature of the problem is such that we cannot fix any parametric value and therefore since the values are even structure cannot be built the non-program decisions are not easy to put into computer. What you call that the management has to participate in a better manner or in a more involved manner in a non-programmed decisions rather than in a programmed decision.

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Now, specifically when the structured and unstructured these actually can come from basically 3 types of considerations of decision-making conditions. The decision maker faces conditions of certainty risk and uncertainty certainty risk and uncertainty. Ambiguity and chances of making a bad decision increases from the certainty to the uncertainty. So the decision-making under certainty is more of a structured decision-making and decision-making under uncertainty more of an unstructured or un-programmed decision-making right. So basically what happens? As you go from certainty to uncertainty the ambiguity increases because ambiguity increases from low to moderate to high naturally the chances of making a bad decision goes up right. So that is the idea here that is the decision maker. First of all whenever we have a decision-making situation we must understand whether it is a decision-making under certainty risk or uncertainty.

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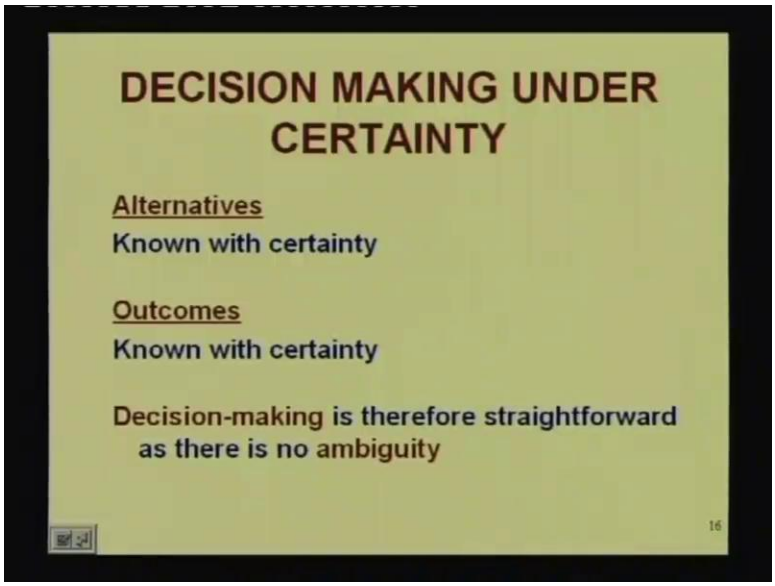

Basically, the first one, decision-making under certainty. Here the alternatives are known with certainty, the outcomes are known with certainty, the decision-making is straight forward as there is no ambiguity all right. So it is a situation where both the alternatives and outcomes are known the only thing the alternatives to outcome the process right under if these are my decision alternatives then what will be the outcome right. So these processes are very clearly known because they are all known. So it is very straight forward. Only thing that is we have to do is identify the alternatives identify the outcomes and put it into practice the example again. Let us give the example of MRP material requirement planning what happens in MRP.

We have a large set of raw materials to be purchased. If we know that all these raw materials are connected through a bill of material that means we are producing certain specific classes of equipment and each equipment requires certain amount of material guided by the bill of material. And we have a definite plan to make certain number of equipment in a given period of time in the coming 6 months we need to make 5000 equipment. So if we have to make 5000 equipment and every equipment has a bill of material we know exactly how much raw material we require to produce this 5000 equipment. So naturally here the decision with regard to raw material purchase that is when to purchase and how much to purchase can be very simple if it connect it

to our production schedule all right which will essentially reduce our inventory also in a tremendous manner.

But suppose you see how these simply simplification is possible, that is the MRP could be actually be implemented. It depends on 2 very important conditions. The first important condition is that you have a bill of material. It is not a jobbing industry where all kinds of things are being produced. And the demand is known. There is not much of variability in the demand of the particular equipment. Now if the demand is variable if the equipment does not have a bill of material it is no more a decision-making under certainty and we cannot have what is known as something as like MRP.

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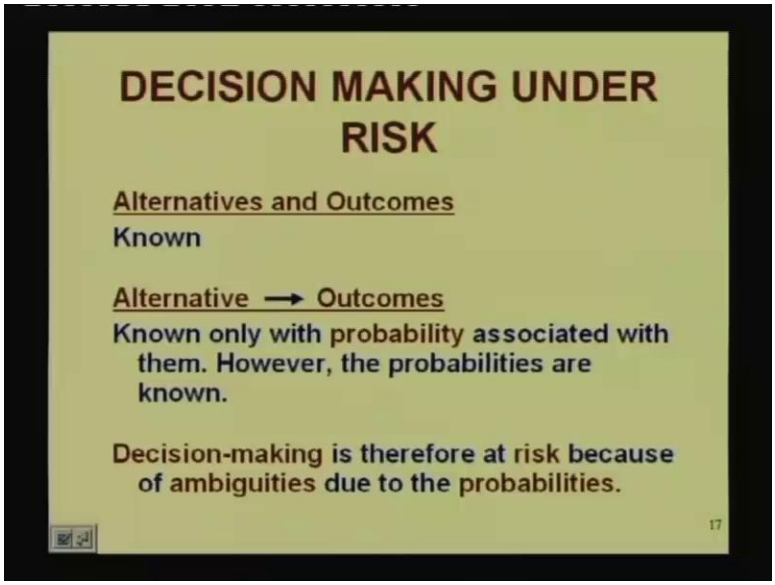

Now decision-making under risk, what happens here the alternatives and outcomes are known. But alternatives to outcome known only with probability associated with them however the probabilities are known. So basically suppose you have different alternative decisions alternatives through decision. Say let us take a simple example of business which is you know doing moderately well but not very well and it wants to do well. So what are the options before it, one is do nothing right second is major minor changes make minor adjustments here and there and the third is make major changes restructure the organization. But what will be the possible

outcome will you do well. It depends on the nature that means certain natural scenarios may actually come in here 1 is the business situation remains as it is there is no change in the business environment.

Second is there is a very positive change towards business environment. And the third is there is a huge competition that is going to come in the next few months. So depending on 1 of these conditions which if they are true naturally we find that the situation is not as simple as it appears to us earlier situation will become complicated. So because the situation gets complicated, because you know whether if you do nothing what will happen so you have to calculate payoffs you have to assign the probabilities and to which alternative to which outcome. Later on we shall see in pay off matrices some calculations with regard to decision making under risk. So here because of these probabilities although known probabilities, we have what is known as decision-making is therefore at risk because of ambiguities due to the probabilities.

Then we have decision-making under uncertainty uncertain situations are those where the alternatives and outcomes are not known with certainty. Instead of 3 alternative which you consider there may be 4 alternatives the outcomes also may not be 1 there may be more than why 1, 2, 3, I mean there may be more outcomes which are not known to us. And alternatives to outcomes not only they are not known. But also their probabilities associated with them are not known or may be known. But they are changing in a dynamic manner those are called stochastic problems. So decision-making is therefore uncertain because of very high ambiguity. So what should be done?

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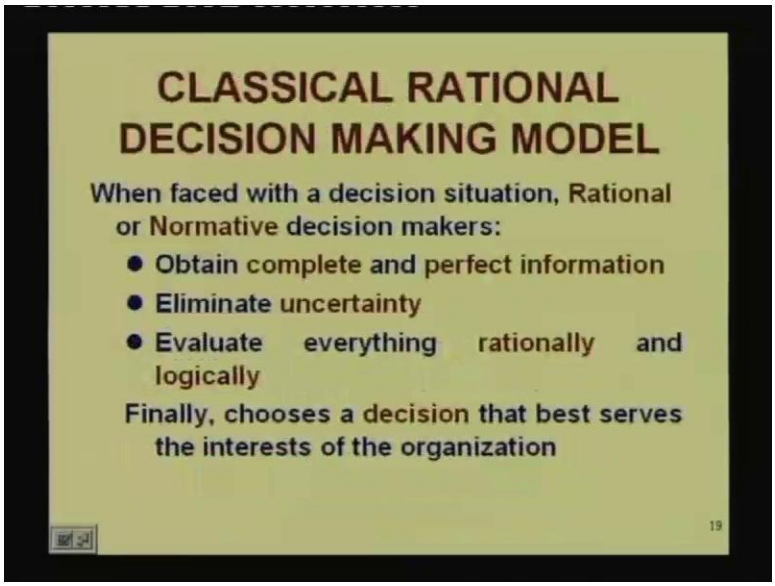

Now essential there are 2. Let us temporally move over to the types of decision makers model of the decision maker as we have already said that there are 2 important models. The rational or the normative decision maker or and the administrative or the descriptive decision maker. Now first of all the classical rational decision-making model. When faced with a decision situation rational or normative decision makers obtain complex and perfect information eliminate uncertainty evaluate everything rationally and logically.

Finally chooses a decision that best serves the interest of the organization. So essential what a normative decision maker would do? Suppose you have a problem that is related to the signaling of railway tracks in a particular situation. Now how can you solve the signaling problem basically you have to collect data you have to analyze you have to see the various alternatives that are available and finally optimize. You know you find out the most effective decision this is a normative method this is a normative method. Basically normative means there is a goal and you are to trying reach to that goal.

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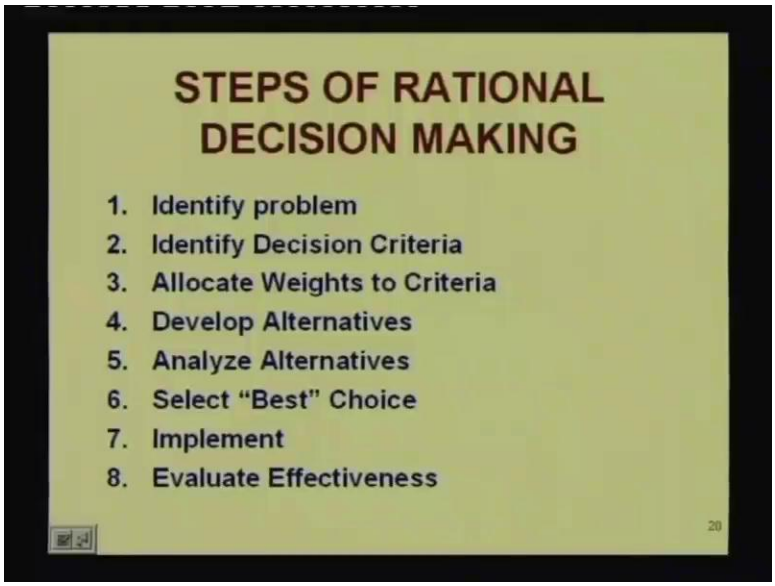

Then the steps again as I was saying identify the problem identify the decision criteria allocate weights to each criteria develop alternatives analyze alternatives select the best choice implement and finally evaluate the effectiveness. So go through the entire decision-making process, go through the intelligence part, go through the design part and finally go through the choice part the choice will depend on the evaluation right. So these are the usual process intelligence design choice that is the usual decision-making process of a rational decision maker. But these may not be true when it comes to an administrative model of decision-making.

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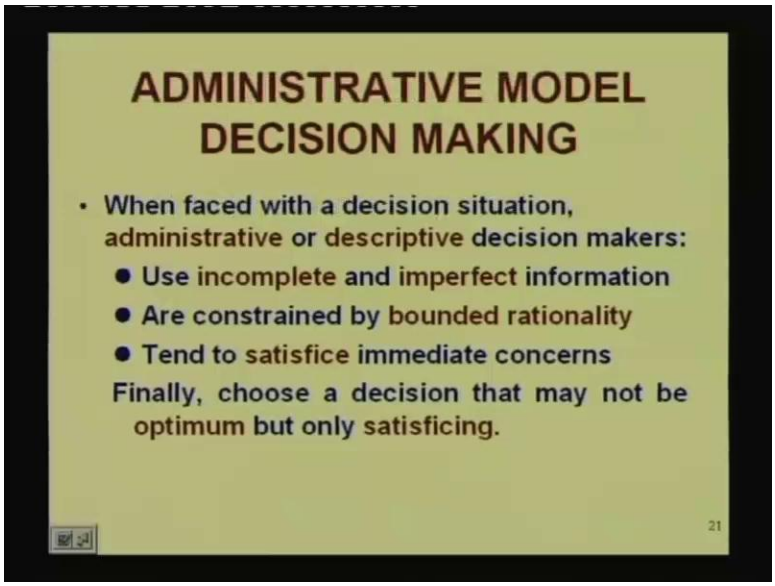

What happens when faced with a decision situation administrative or descriptive decision makers use incomplete and imperfect information are constrained by bounded rationality tend to satisfy immediate concerns. Finally choose a decision that may not be optimum but only satisficing. So here the basic idea is the administrative model of the decision maker. They are so called descriptive decision maker would like to see what has happened in the past all right. So that means what are the decision rules that were in use. For example you have to do a budget allocation to a large number of what you call let us say states or large number of organizational units. So you are in the corporate body and you have to allocate budget every your organizational unit has submitted their request for budget with a projection and you have to approve a budget.

You can actually if you are a rational decision maker you can actually look at the prospective plan you have to match with what are the goals of the organization. What the organization? What is the strategic plan? How the organizations wish to see itself every 5 years from now? And accordingly you know the future plans super imposed on the budget they should obtain what should be the budgeted amount to each organizational units that is a rational decision-making. Whereas an easy way out probably is an administrative model where you see the past budget allocations find out a ratio and do rationing.

That means if these are my last year budget and these are the requirements in these ratio we divide the available money that we have this year for allocating to budget. And accordingly you decide which organizational unit should get how much. So as you can see that this is an imperfect information model constrained by bounded rationality it is satisficing rather than you know optimizing we are not trying to optimize we just try to find out 1 solution that probably satisfy all the, you know organizational units for the time being all right. But you know the difficulty with these kinds of decisions that because it is not optimum.

But it is satisficing many a time we find that such decision is floored that a what you call a systemic thinking is missing here. We may not be able to see a totally new approach; a new kind of thinking may be totally missing all right. That is the disadvantage side. But on the advantage side it is easy to implement this is easy to implement and not only easy to implement in some situations probably this is the only way just absorb how people have done in the past right. So instead of wasting lot of time and resource to find out what should be the best decision when the decision has to be quick the administrative model probably can be easily resorted to.

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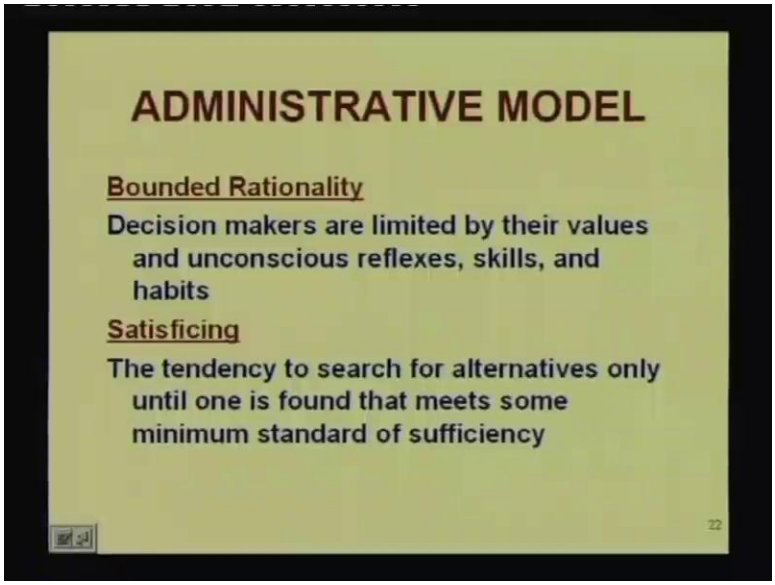

So some of the important concepts the bounded rationality decision makers are limited by their value and unconscious reflexes skills and habits. So bounded rationality means it is not always

possible to be completely rational about a decision-making situation. Everybody is mental view or the mental model is limited we may like to see everything very clearly but we may not have the vision. So if we do not have the vision and we are bounded by our rationality we have to make our decisions within the bounded rationality right. Satisficing the tendency to search for alternatives only until 1 is found.

That meets some minimum standard of sufficiency. That is called satisficing. So if you try to optimize let us say you want to make a budgeting decision by optimizing the future benefits may be you may not find that optimum solution at all the problem may not be solvable. Whereas through satisficing through the past may be the anchoring adjustment rule you may be able to find a quick solution and that quick solution may be people may agree to it so that is called satisficing.

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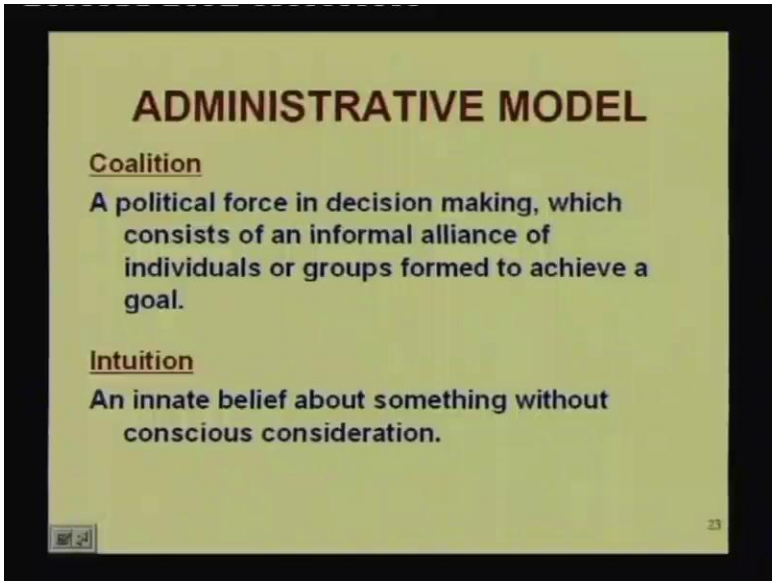

Then coalition a political force in decision-making which consists of an informal alliance of individuals or groups formed to achieve a goal. So coalition can also be at play what may happen that a group of people organizational units. They may force upon the corporate body yes we require more budget this time right. We cannot have or we do not expect a cut in the budget even though our performance is not that good. So even if the organizational future plan is otherwise

the coalition force could be quite high and because of this coalition force the organization may have to bow to their needs and may have to allocate them more budget then they might have planned intuition an innate belief about something without conscious consideration the intuition.

Sometimes the adjustment process on the anchoring could be intuitive in the sense really not doing rational calculations not going for optimization not quantifying. But trying to have, you now we sometimes say that people with vision right. So the person says okay. We allocate very large budget to this particular unit. This time let it come up if it comes up then it can serve all the other organization units. So later on people will say that he was a visionary and he started this particular unit and we are today getting the benefit right. So this is something that is difficult to explain. And intuition is something either you have it or you do not have it. There are some managers who are intuitive and because they are intuitive they are able to make decisions which are very different from the traditional ones.

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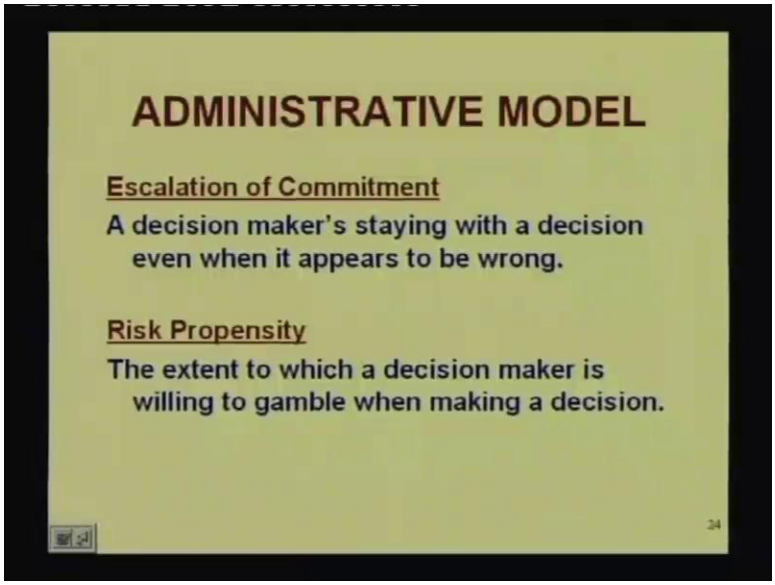

Escalation of commitment a decision makers staying with a decision even. When it appears to be wrong this is sometime it may happen that is in an administrative model of decision maker sometimes people could be very, very dogmatic about the kind of decision that they are making. Some people may see that okay in the budgeting. We do not want to put more on information

systems. So the proposal that the company requires an information system upgrade may be rejected all the time. But if it gets rejected all the time the information resources or information architecture of the organization will can never be upgraded it will always remain at the low end of technology all right. However the very fact the decision maker will not agree you have the kind of boss who does not believe in information systems.

So this is the kind of escalation of commitment which you know will never allow the organization to flourish as far as information systems are concerned. Risk propensity to extent to which a decision maker is willing to gamble when making a decision because whenever you are making a decision you are also liable or you are also taking a gamble in the sense suppose the decision does not come good, then we all have to face the consequences. Now if the decision maker is not ready to do it he may take the existing path the path of least resistance and take decision which is traditional. So the ability to take risk the risk propensity is also a very important consideration in the administrative model of decision maker.

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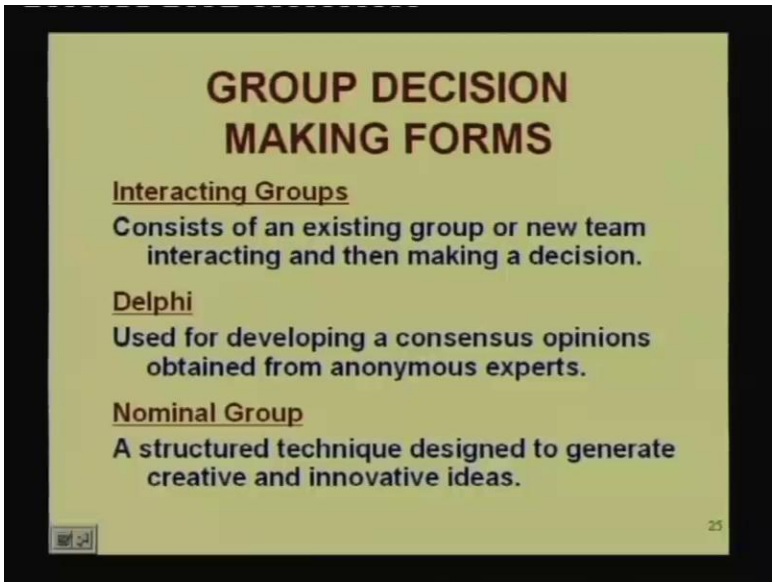

Now let us see certain interesting points about the group decision-making forms. Now we discussed 3 essential group decision-making forms. The first 1 is interacting groups. Here we have an existing group of new team interacting and then making a decision. Then 2 other

methods 1 is the Delphi used for developing a consensus opinion obtained from anonymous experts okay. And the nominal group which is a structured technique designed to generate creative and innovative ideas. So we shall see some details about the nominal group and Delphi which are forms of group decision-making compared with an interactive groups right.

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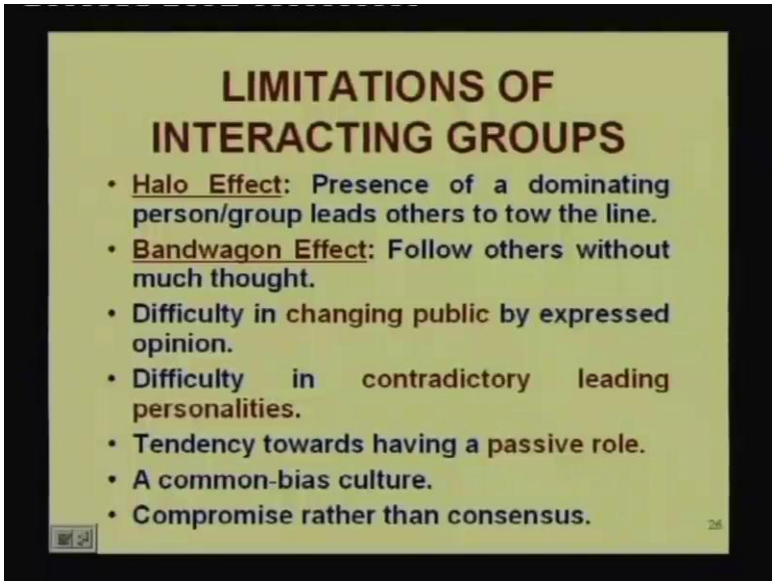

First let us see what are the usual problems or limitations of an interacting group. The first 1 is called a halo effect the presence of a dominating person or a group leads others to tow the line right. So what happens in a halo effect is that if the group or interacting group has a person who is very dominating, he may have an halo about him and all the others will simply agree they do not really contribute and the group does not you know succeed in bringing out consensus. Bandwagon effect sometimes people follow others without much thought as if in a bandwagon the bandwagon is like you know a number of wagons or vehicles who are going together right that is bandwagon.

Now these bandwagon effects usually make people to act in a passive manner right. So, that is may not be very good when we are interacting. Third is difficulty in changing public by expressed opinion. So why try it? Because I say something and the other person is saying something else and we do not tend to agree because you do not tend to agree and we have lot of

efforts in making each other agree. The more time will go in these processes of making each other agree I mean making consensus through agreement and hum nothing much may be achieved difficulty in contradictory leading personality's difficulty in contradicting. Basically contradicting leading personalities.

So what happens when a leading personality is saying something and we want to contradict it may be difficult for us. Then tendency towards having a passive role right so sometimes we tend to have a passive role and do not like to put effort to really interact or bring consensus. Then a common-bias culture sometimes what happens, we find all the managers. I mean organization are from the same school same engineering college. And therefore their thinking processes are all alike and therefore they believe in a certain kind of management style and no new ideas are welcome. So this is a common-bias culture. Then compromise rather than consensus many time it may also happen that it is not a true consensus it is a kind of compromise.

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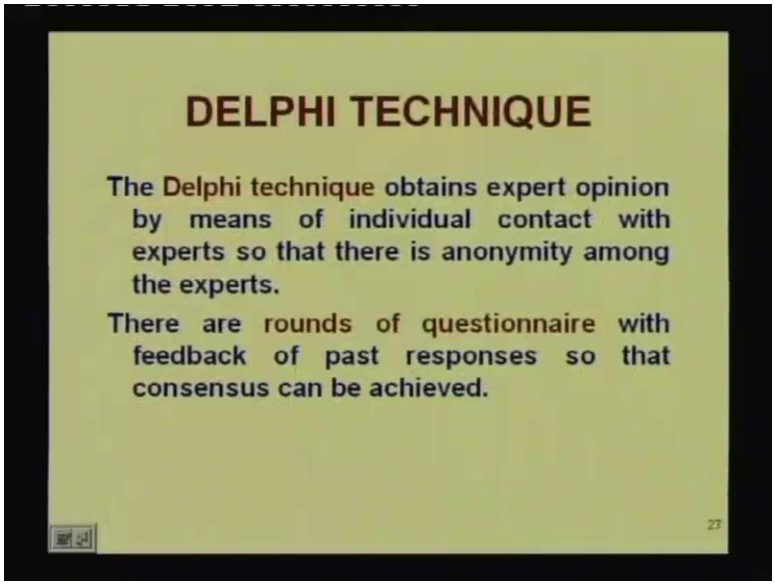

So what the 2 techniques, they that we shall discuss? The first 1 is the Delphi. We would like to see how these Delphi techniques are different from an interacting group. The Delphi technique obtains expert opinion by means of individual contact with experts so that there is anonymity among the experts. So it is a group of experts who are anonymous to 1 another and there are

rounds of questionnaire with feedback of past responses. So that consensus can actually be achieved.

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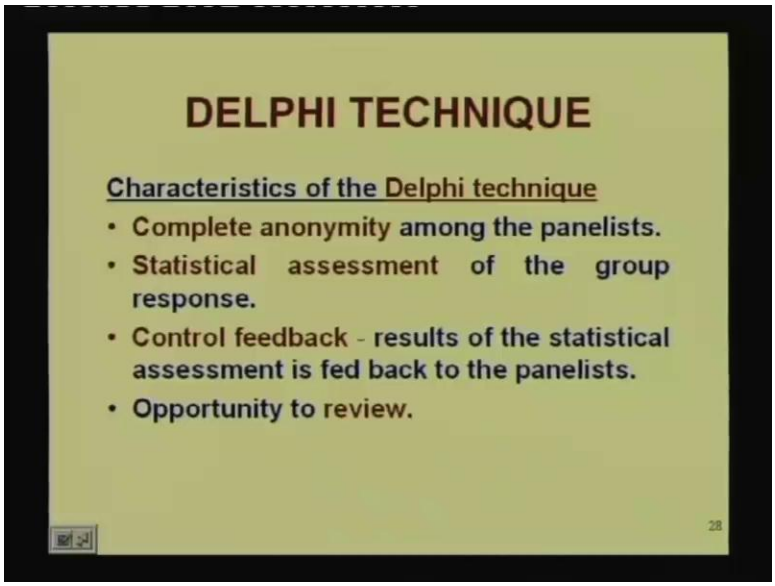

So some of the characteristics complete anonymity among the panelists statistical assessment of the group response control feedback results of the statistical assessment is fed back to the panelists and finally opportunity to review. So what happens in Delphi a particular issue is decided and this issue is that is our next slide okay. An issue is decided and this issue with rounds of questionnaire in the first round the experts are asked to give their opinion depending on what opinion they have given the statistical assessment is done specifically with medians and interquartile range of values. Then on the basis of these again if the experts or panelists change their opinion that is has been assessed. And finally with a multiple rounds of questionnaire the final issue is settled. If consensus is achieved that means experts have changed their stand then we say that Delphi technique has become successful.

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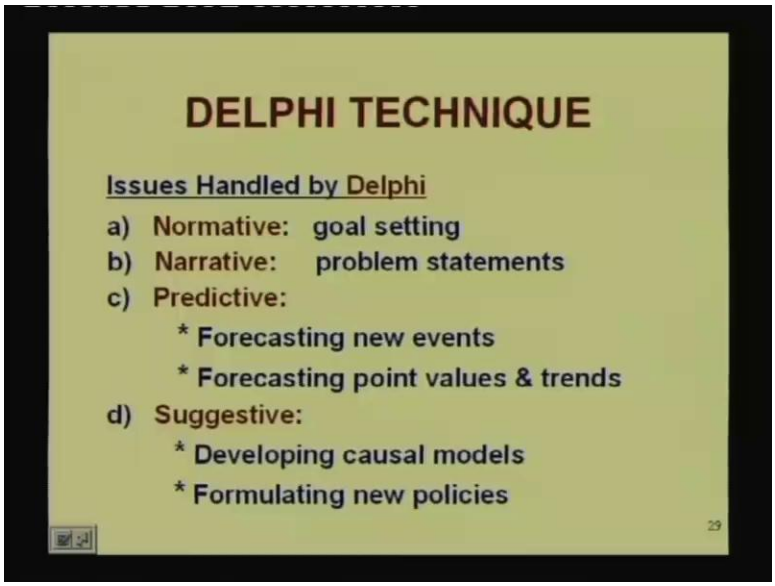

Now the issues handled by Delphi, there are normative Delphi for goal setting narrative Delphi for problem statements; identifying problem statements predictive Delphi for forecasting. New events or forecasting point values and trends suggestive Delphi for developing causal models or for formulating new policies. So there are different kinds of issues that may be handled by Delphi starting from goal setting to problem statements to forecasting to suggestive ones like developing causal models or formulating new policies.

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Some of the requirements of Delphi there should be a monitoring team a group of panelists rounds of questionnaire group response should be obtained statistical assessment of group response and finally group consensus. So this is the method which is a qualitative method very different from the quantitative ones and this 1 such method by which we can try to build group consensus. Let us see another such technique which is known as nominal group technique.

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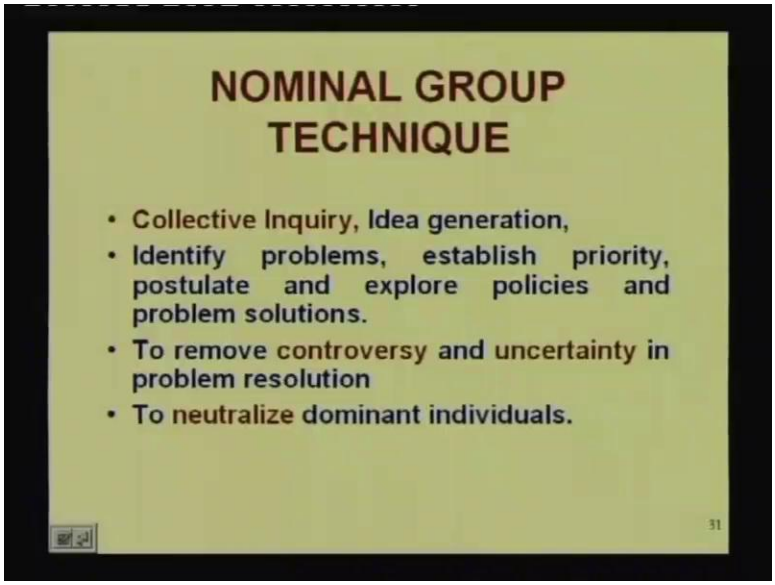

Nominal group technique is a method of collective inquiry idea generation through idea generation identify problems establish priority postulate and explore policies and problem solutions. Then to remove controversy and uncertainty in problem resolution and finally to neutralize dominant individuals, what happens in a nominal group technique it very much depends on a facilitator. The group which is actually participating in a nominal group technique, they do not interact with 1 another every interaction has to be through the facilitator.

The facilitator does not take part in the actual discussions an issue is selected on this issue selected by the facilitator the individual. What do you call the participants they explain their opinion and the issue is settled once the issue is settled everybody contributes an idea. Then on these different ideas that has been collected through rounds of these NGT process or nominal

group technique process. Then they are collated and once they are collated then people vote for their ideas and finally they are structured into the ideas generated by the group.

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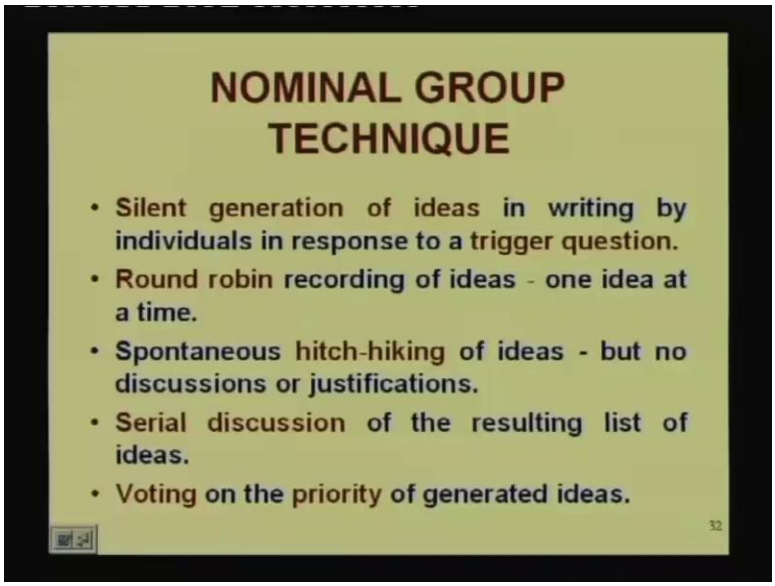

So the process goes like this silent generation of ideas in writing by individuals in response to a trigger question. Round robins recording of ideas 1 idea at a time spontaneous hitch hiking of ideas but no discussions or justifications serial discussion of the resulting list of ideas. And finally voting on the priority of generated ideas. So this is the method of nominal group technique.

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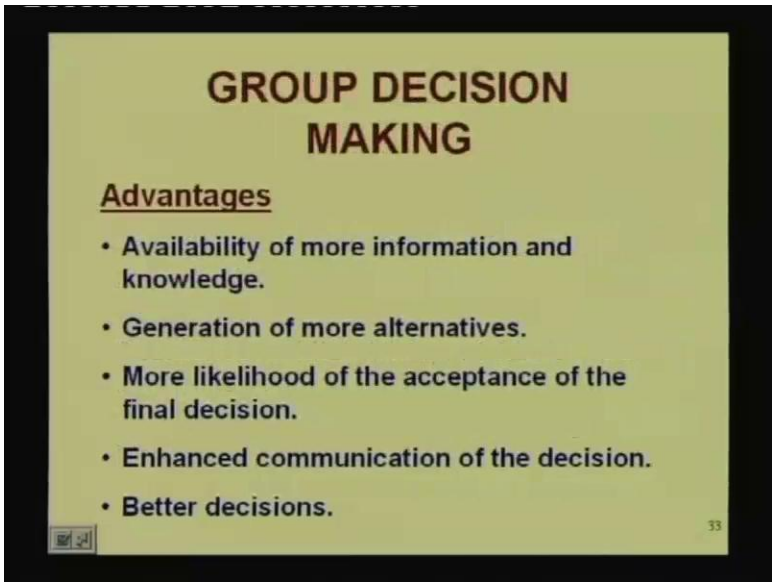

Finally, some advantages and disadvantages of group decision-making advantages. Availability of more informational and knowledge. Generation of more alternatives more likelihood of the acceptation of the final decision because the group is involved. Enhanced communication of the decision and better decisions. So what happens if you can do an NGT or if you even have an interacting group we have the decision that has finally been taken is taken by the group. And if this group is that management of the organization, then we have already you know reached a situation where the acceptance of the final decision is almost done right. So more likelihood of the acceptance and enhanced communication because the group has actually participated and many of the differences has already been thrashed out. But there are some disadvantages as well.

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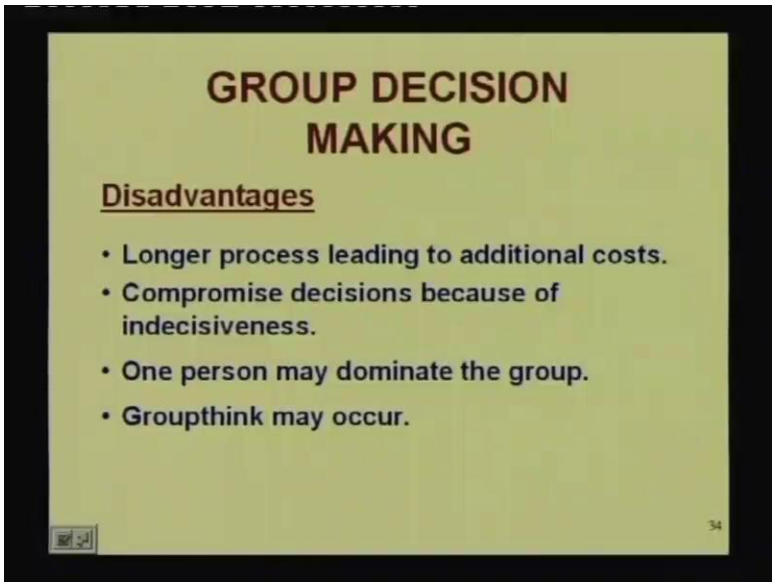

It is a longer process leading to additional costs. Compromised decision because of indecisiveness sometimes people are indecisive so it could be compromised decision as well. Then again people some people may dominate. And group think may occurs actually group think means whenever there is a group the group may actually participate amongst them. And there would be lots and lots of communication and the communication over it can actually over shadow the positive effects of the group right. The positive effects of the group decision-making. So we should be careful about such effects that we should not allow.

That is why the NGT's and the Delphi etcetera. These kinds of consensus methods they try to reduce the group interaction to the extent possible. Because if there are 20 participants and each talk to only a facilitator. There are only twenty communications all right. But if they talk to each other, then the number of communications are very, very large and it increases exponentially as the number of participants increases. So thank you very much. We will stop here today and in our next class we shall see the effect of or the impact of information systems on management.