Management of Inventory Systems
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Lecture - 52
Value Engineering / Analysis and Stores Management (Contd.)

So, now, I am say going to discuss the process or the method you should follow, for carrying out a typical say the value engineering say for carrying out typical value engineering project.

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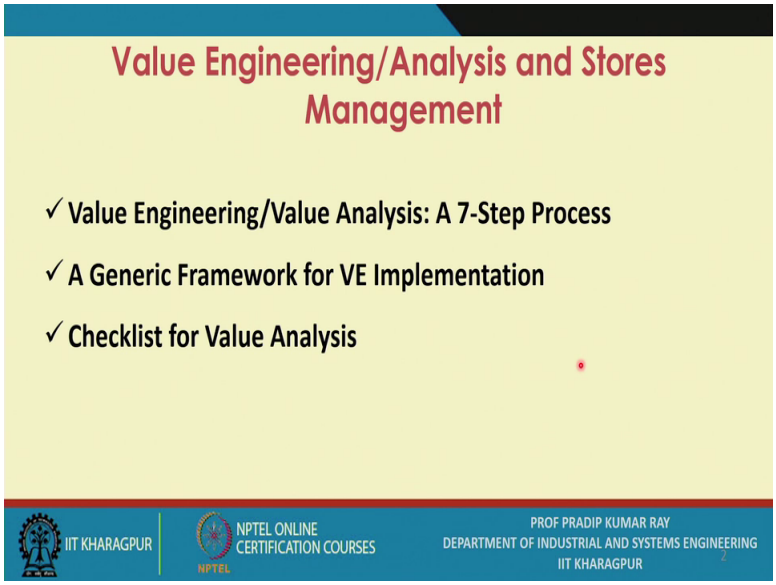

Now, so, during this lecture sessions, I will be covering Value Engineering so or the value analysis this I will explain, that that how do you carry out such an analysis and usually we follow a particular process. And in this process there are 7 steps, these the steps are interrelated.

So, will be explaining all the steps in detail and then once this is known then for implementing a value engineering say the a project, then what kind of the framework you may suggest.

So, a generic framework for VE implementation will discuss where all the important points will highlight and before you take up a project on value engineering or value

analysis in a given manufacturing systems. So, you must learn the generic framework by heart.

And of course, whether you must know that a while you carrying out value engineering exercise, whether you are in a right path or not. So, several questions you may have and so, that is why a checklist for value analysis we must referred to and this checklist you must know what is this checklist. So, this will be our coverage during this lecture session.

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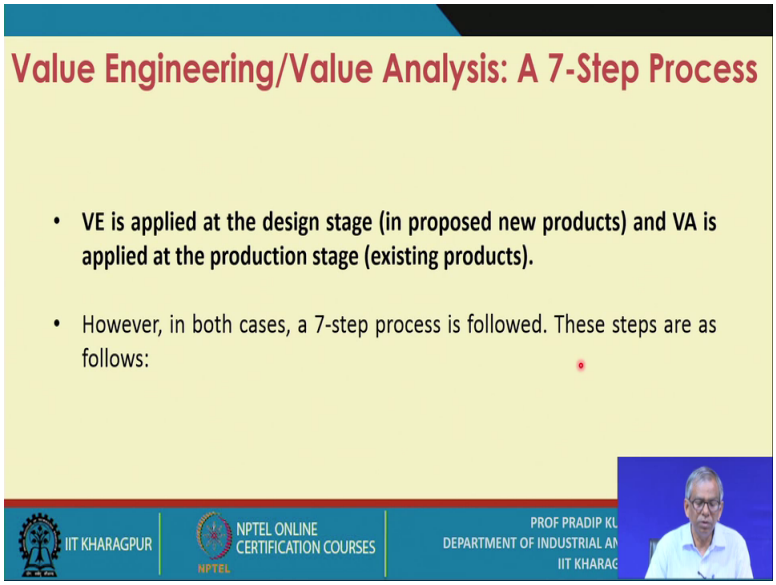

Now, we have already mentioned that value engineering is applied at the design stage as such as per as process of the carrying out value engineering or value analysis say exercise is concerned or the project is concerned. There is as such no difference as per as the activities to be carried out or the tasks to be assigned but, the VE is applied at the design stage already we have mentioned in proposed new products.

And, VA is applied at the production stage existing products. However, in both cases a 7-step procedure is followed for carrying out the whole exercise on value engineering or value analysis. Now, what are these steps?

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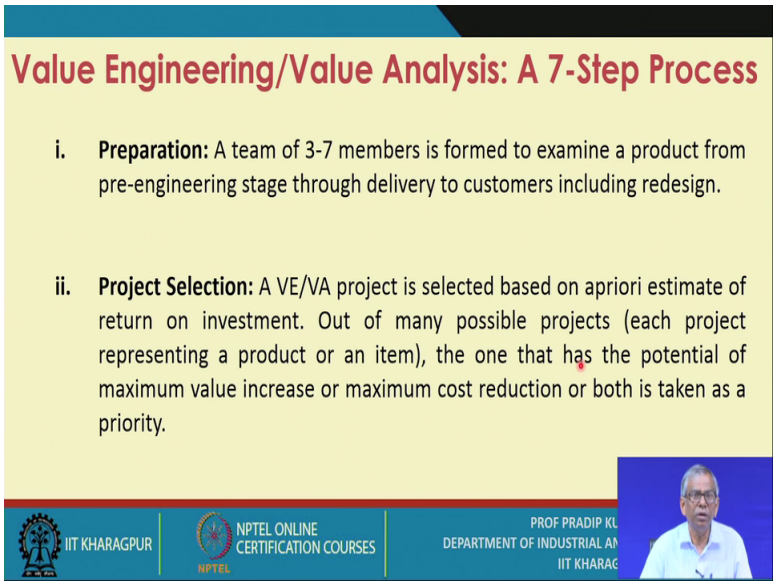

So, let me explain or let me so the tell you all these steps and in each steps what actually you are supposed to do? Now, first phase is the preparation phase. The this is very important in fact.

Now, in this preparation phase this is your starting point. A team of 3 to 7 members is formed. That means, what we are assuming, that each and every value engineering or value analysis project is a unique one, and there must be it is a team effort. So, that is why the team has to be formed is it ok. And, you from the team in such a way, that it is possible for you suppose as a team leader, suppose you become the team leader.

And, you formed the team in such a way that, it is possible for you to apply. And not only for you it is possible for each and every member of the team to apply and interdisciplinary approach is it ok. That means the problem of the cost reduction so, problem of a material substitution, the problem of value enhancement, these are the 3 issues. These problems are very complex in nature. And there are different dimensions, and each dimensions may represent or may require to address a particular dimensions, you may require so, the knowledge in a particular discipline. This has been the case with majority of the case studies related to value engineering or value analysis.

So, with team has to be formed and a multidisciplinary team you have to form. So, that interdisciplinary approach you can have for value engineering or value analysis exercise.

Now, what is the role of this team? That means, their responsibilities to examine a product from pre engineering stage through delivery to customers including redesign.

That means, all the stages you should look into; that means, given a product the team members must be aware of its design process and why a particular design is being offered at this stage, what are the reasons? And, whether there exist say the alternate designs. And, what are these alternate designs for the product.

This the details say you must have in your knowledge base plus what sort of the materials you use, what is the existing you know the production process, how do you deliver it ok and during the delivery time or when you distribute the product to the ultimate users, then what sort of problems you face related to say the product performance. The performance of the site and for the industrial product or the types of complaints you get from say the customers, for say both industrial product as well as you know the consumer products.

So, all these information you must consider; that means, a total systems approach you must be able to apply. So, this is the preparation and this is the preparation phase. The next phase what you do? Now, normally what we find so, suppose you deal with in a given situation some. So, the 200 parts of 200 the items say at a particular instant in time. And, obliviously you know the value engineering exercise, you can undertake for each and every item.

Now; obviously, you know with limited time and resource you have to very selective. Now, while you select the few products for value engineering say the study. Now, you must be able to specify the selection norms. So, this is referred to as a project selection. So, what you do basically? Now, the project is selected during this phase a project a particular project on VE or VA is selected based on apriori estimate of return on investment. That means you need to the study as per the VE or VA norms a particular product. And, suppose you select this product a particular item suppose you select.

Now; obviously, there will be a study and associated with the study there is a cost. So, you must be able to estimate that what is the expected you know the cost of study? Where both the fixed cost as well as you know the variable cost you must consider. And then these cost is essentially is an investment; that means, you expect a certain return out of it.

So, what are the benefits you might get? Ok so, that also you must have very clear idea; that means you explore also so, possibilities and you say that if, we carry out this value engineering say the study for the given item. The expected benefits in terms of value enhancement in terms of the cost reduction is it ok, is this much. And so; obviously, you are in a position to estimate you must be in a position to estimate the return on investment. And, out of many possible projects; that means, each project representing a product or an item. The one that has the potential of maximum value increase or maximum cost reduction or both is taken as a priority.

So, this is your goal and this way we define the return or the benefits, out of this say value engineering or value analysis study. So, the second phase is very important, it may so, happened that out of say the 200 products or 200 items we are dealing with, at this point in time, you select say the 10 items as the possible candidate for say the VE project or VA project ok. So, this is called project selection.

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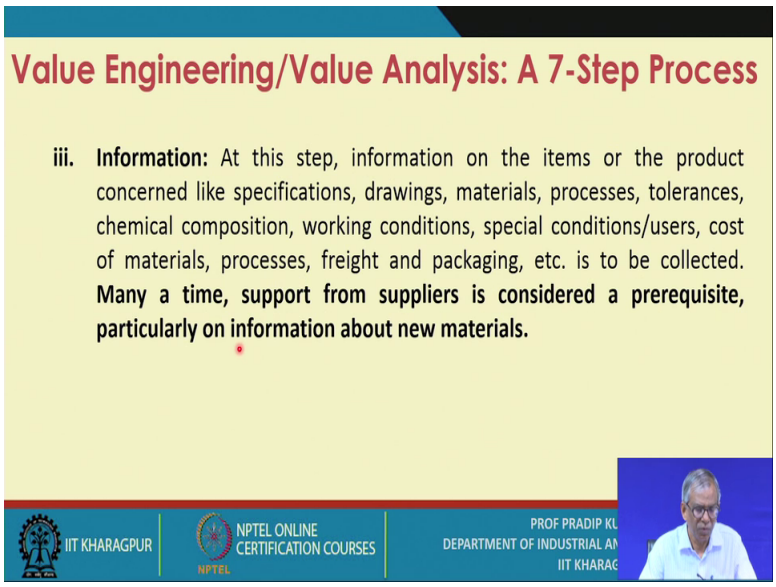

Next, what you do if you select a particular item, then related to that item you need to collect information. And; obviously, during this information phase, information gathering phase, you need to collect all the relevant information. And this, the set of information usually is a very large set you have. So, what you try to do? That means, at this step information on the items or the products concerned ok; you need to collect.

So, what are the relevant information? The information is essentially you refer to the specifications, existing specifications of the product, the drawings, materials, being used for the given product processes. That means you need to refer to the process plan. And, if it is the standard item or suppose you have been producing this item for a long time.

Obviously, you know you refer to its drawing; it refers to is process planning. And, the processes are known that the sequence their sequence is also will be known, that the tolerances will get an idea about the tolerances; that means, for which quality characteristics of the item or the product, you are very tight tolerance and for which quality characteristics, you have say the loose tolerances.

So, these detailed information you must have including the chemical composition, working conditions, the special conditions or the users ok. So, you must have the knowledge about this and then the cost of materials existing cost of materials and while you proposes the cost equation, what are the cost elements you considered right at this point in time.

So, in the process what you what you must do? That means you study the existing cost equation and the components of the product the cost structure. And then the freight and packaging processing materials, what is the processing cost, the freight cost, and the packaging cost.

So, all these details you must have and you must have an information system. So, if you have a say the manual systems for information gathering so, maybe difficult for you. So, many a time what you do in order to make the entire excise regular you know say the assignment or say the regular job. That means, the proper information system support you must have. So, the many a time these days, you are going for say the implementing a computerized say the information system.

So, many a times support from suppliers is considered a prerequisite particularly on information about new materials. So, this point is to be noted because, you know the whole exercise may be dependent on say the to what extent your able or if you can go for material substitution. Obviously, if you have say the close relationship with your suppliers or the or the supplier base you have created, already the company has got it is you know the fixed supplier based.

So, the suppliers may give you a lot of information regarding material substitution.

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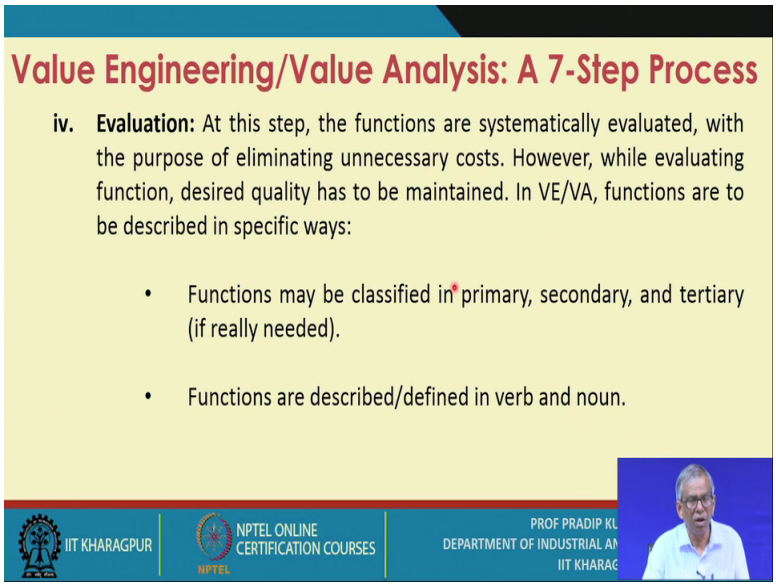

The next phase is the evolution phase, this is very critical and you have to evaluate the product from a number of perspective. So this perspective are already known to you, but you have to follow the procedure as provided by it is while expected framework. So, at this step the functions are systematically evaluated, with the purpose of eliminating unnecessary costs because so, what you need to do? That means, once the cost elements are identified, then you were the classify them, you categories them under due to categories, the necessary cost element and unnecessary cost elements.

So, once you identify this unnecessary cost elements so, you need to say the think of ways and means of eliminating them. However, while evaluating the function of a product; that means, essentially it reflects the performance of the product, desired quality has to be maintained is it ok. That means, if the quality there is no compromise on the quality or the same level of quality you have to the maintain and, if not the improved the quality, you are able to say the prescribed for the product. In VE or VA functions are to be described in specific ways.

So, this when you go through this process, this is a standard format so as for so, you have to follow this format. And, where what do you do the functions are classified in 3 in 3 parts. The first given a particular product, you must be able to identify that what is this primary function? Like for a pen so, the primary function is it writes.

Then, you have a secondary function; that means, you can hold it, is it ok. So, the holding features. And, the tertiary function could be you know there are many other say. So, the functions the way it is assembled ok, that is whether that is acceptable or not.

So, in 3 categories, you have to mention the functions of a product. So, the first category is the primary function, for which this is this has been designed. The second function or the second one is the secondary function. And, then also you can go to the tertiary level. If, really needed, then functions are described or defined in verb and noun.

So, when you take up just you make a note, when you take up the case study, say you will come to know; say how the sentences are made; on the and indicating, actually when you go through this the sentences, you will get an idea about the products the primary function, or the secondary functions, or the tertiary function.

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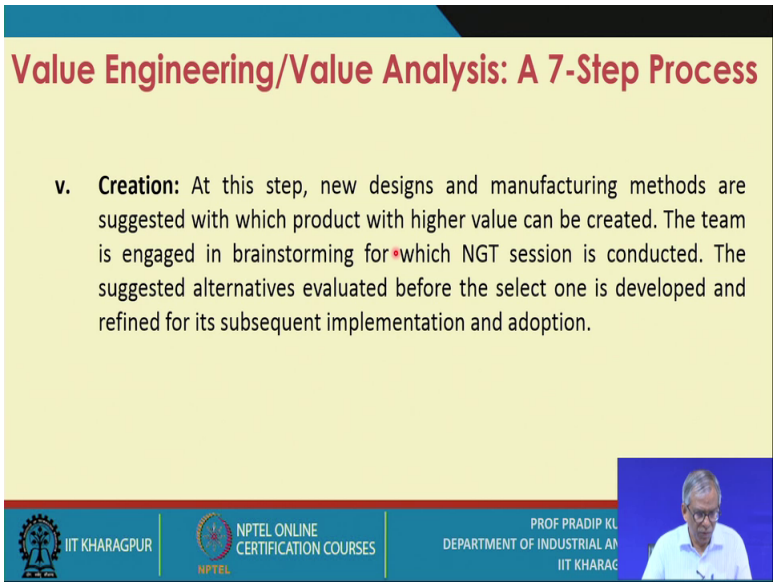

Now, the next stage that is fifths step is the creation phase and this is very important. As I have already pointed out, that you must have adequate creative mind or the creativity. And so, now, what you need to do essentially you need to in all together the new product many a time. And, it is not that that is with some incremental the changes you recommend and then you say this is a value engineering exercise.

So, usually what are what has happened through value engineering exercises, you can you can develop the product and all together with different product, you may suggest.

So, this particular phase this is referred to as the creation step is very important. So, what do you do? At this step, new designs and manufacturing methods are suggested with which product with higher value can be created ok. The team is engaged in brainstorming for which NGT session Nominal so the Group Technique.

That means, an you know through so, the brainstorming sessions; that means, so the group start thinking about what are the new ways it can be designed so, that the value can be enhanced. So, the many ideas you deal with and an unusually you know a typical nominal group technique is conducted. Maybe you need to conduct it several times, but this is the only way you can get a new ideas for improving the product value. There are several instances several ways we can do this and, but the NGT session, but the NGT nominal group technique.

That means the structure the communication process among the team members, it is highly acceptable and well you know say highly effective in majority of the cases. The suggested alternatives evaluated before the select one is developed. And the refined for it is subsequent implementation and adoption.

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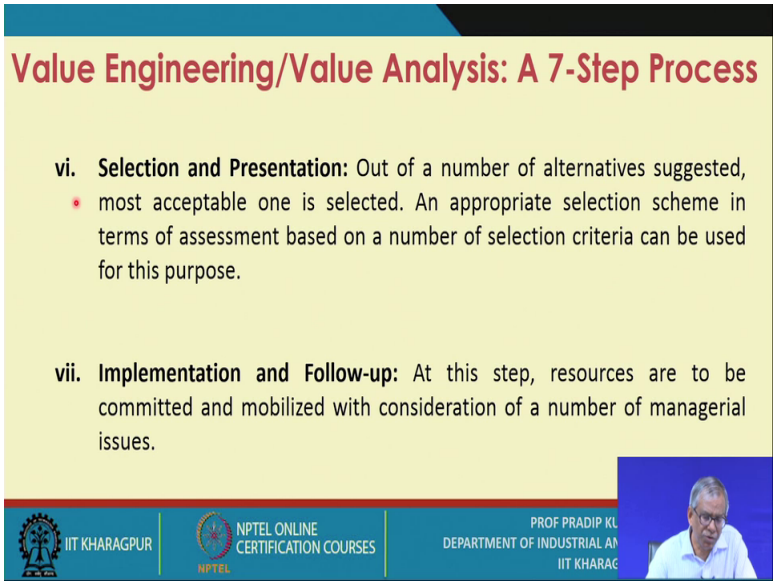

As a sixth step you go for selection and the presentation. Out of a number of alternative suggested, most acceptable one is selected is it ok.

Usually what happens? That from through the NGT session from the from the team members, you get the different types of say different alternatives for the same product. Now out of all these alternatives you have to select one. So, what you try to do? That means each particular alternative must be evaluated a with respect to a set of criteria. So, an appropriate selection scheme, in terms of assessment based on a number of selection criteria can be use for this purpose.

So, later on when you refer to a case study you will come to know that how out of many alternatives, which one you can select as the best one or the appropriate one. And of course, the last step is implementation and follow up, and for implementation you can suggested a different framework and very soon we are going to discuss that particular framework.

But, what you are saying that ultimately you know you face the problem of implementation. So, once it is implemented, then regularly you follow it up, is it ok? That means, you expect some say the good return out of this project, whether actually you are getting this return or not. And, if not then what are the possible reasons and whether you are able to so, the handle or eliminate those reasons or handle those problems or not properly. So, that the return an increasing return from the project is guaranteed. So, at this step resources are to be committed. Many kinds of resources many ways you do and mobilized with consideration of a number of managerial issues ok.

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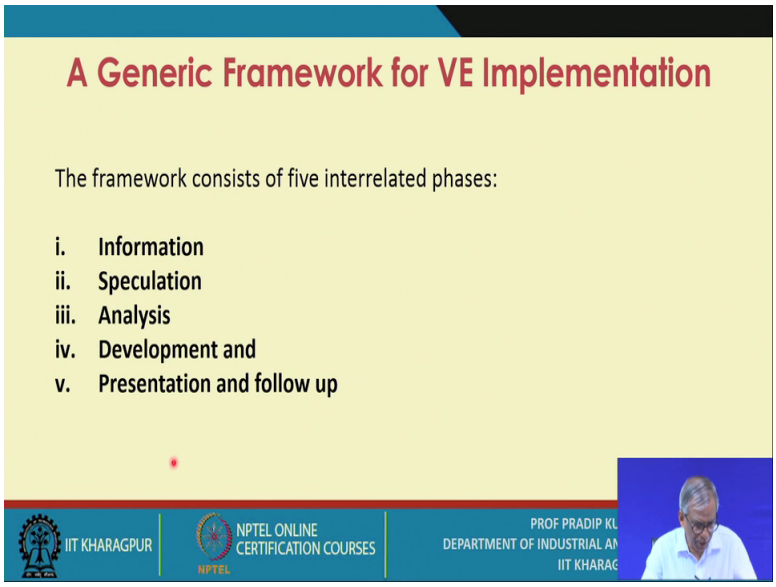

So, these are the 7 steps. Now, we discuss a generic framework for value engineering implementations. So, the implementation is the last step. These are the 7 step and as implementation is a very the difficult game is not that easy. So, you have to follow a particular say the generic framework. And, and we also must know that what are in advance, what could the possible problems you may come across, while you start implementing such a project. And what are the say the mitigation measures, you have against all this problem.

So how deeply you can think of about its impact on the with respect to the several factors. And, accordingly you can think of is the set of problems, possibly you can you can face or in counter in course of time. And, what are the possible causes and what are the counter measures you can take. Ok? You may opt for to address these problems to remove their causes.

So, this framework consists of 5 interrelated phases. So, the first phase is information, the second phase is a speculation, the third phase is the analysis and the fourth phase is the development and the last phase you have the presentation and follow up.

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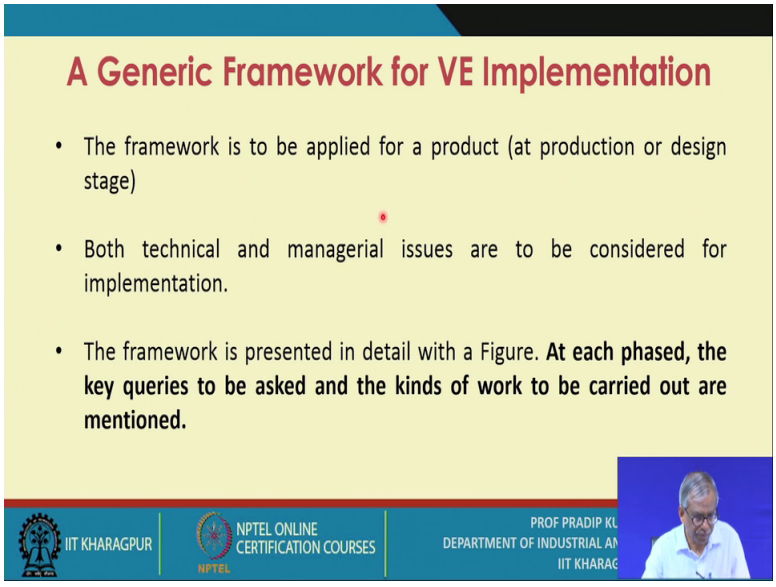

Now, this framework is to be applied for a product, at production or the design stage. Both technical and managerial issues are to be considered for implement, please note these points. And; that means, both technical issues as well as the managerial issues you need to consider and these framework is present in detail I am presenting it with a figure.

So, that you can understand the details, at each phase the key queries to be asked and the kinds of work to be carried out are mentioned.

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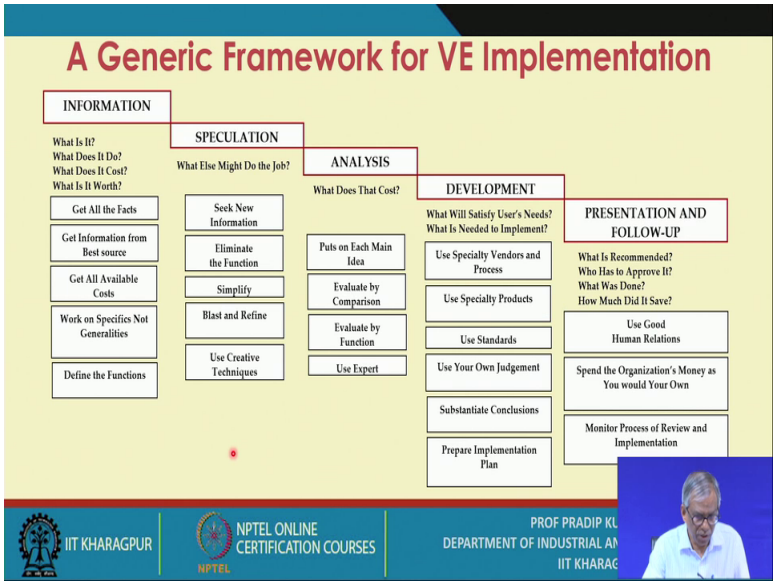

So, now before I close this session I am just referring to this generic framework for VE implementations. So, let me just a certain points let me elaborate. Like at all these were the phases; that means, there are 5 phases and each phase you are supposed to raise certain questions ok.

So, unless you are able to raise the questions, you will never be able to find out the problem and, but this questions are to be raised in a systematic manner. Like, while you are in the information phase, you say that what is it? That means, what is this product? What does it do? In clear and specific terms you must be able to define it ok; you must know that what does it do, what does it cost, you must have this idea, what is it worth; that means, what is this value ok?

So, in a systematic manner you must ask these questions. The answer to this questions, you need to get all these information. Like get all the facts ok; that means, you have to refer to the past data, get information from the best source. So, it is your duty to identify the best source, get all available costs. Work on specifics not general it is this point I have been telling you all the time that this is a specific exercise; that means, for a specific product, you are carrying out such an exercise. Define the functions you have to define it.

Now, once you the information phase is completed, then you go to the next phase the just speculation. What else might do the job? That means, there could be many alternatives, your main purpose is to get the say the work done or get the function or get the function.

Now, one product you are you are prescribing it may so, happened that that same function you can get by employing some other means. So, this is referred to as a speculation seek new information, eliminate the function, simplify, blast and define; that means, entire the product details you must know in all the phases I have already pointed out use creative techniques. The creativity is the key for success. Next phase is analysis, what does that cost if you suggest some alternative.

See you must be in a position to calculate it is possible cost, puts on each main idea evaluate by comparison, evaluate by function. So, function is the key and use expert views; that means it is to be you know the supported by the experts, then you go for the development what will satisfy user needs. Now, you think of the customer needs or the user needs, what is needed to implement.

So, these are the points you go through and the next once you complete the fourth phase, then you go to the last phase that is the presentation and follow up. So, what is recommended, who has to approve it, that means, usually you get the sanction of the higher authority, what was done, how much did it save. So, all these details we have already refer to so, these are the pre conditions, you must have likes say, you must use a good human relations spend the organization's money as your own and monitor process of review and implementation.

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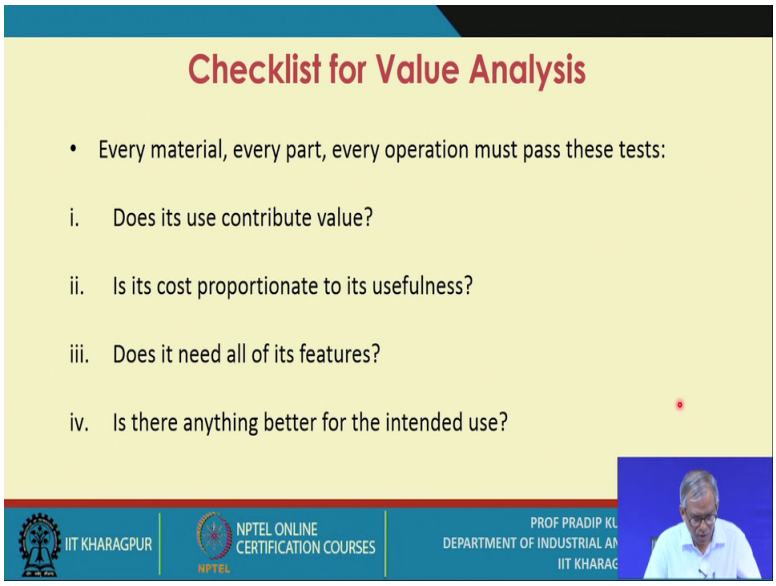

So, this is the fame work you go through and this is the checklist so, certain questions you asked. So, you just go through this checklist say every material every part, every operation must pass this test. So, I will just read it out, does it is use contribute value, is it is cost proportionate to it is usefulness, does it need all of it is features, is there anything better for the intended use, can a useable part be made by a lower-cost-method? Ok.

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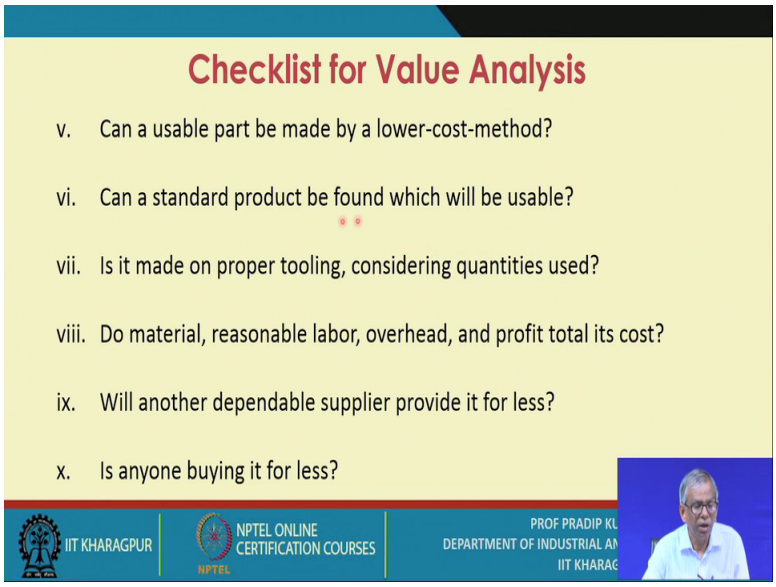

So, this during the speculation phase, you can ask all these questions. Can a standard product be found which will be usable, is it made on proper tooling considering

quantities used, do material, reasonable labor, overhead, and profit total is cost is there any cost element you are missing right now, will another dependable supplier provide it for less? That means, whenever you talk about the material substitution. And is anyone buying it for less? That means you must have you know the knowledge about it is market that is the products market. Who are your competitors and which price your competitor are the selling the same product so, with this knowledge ok.

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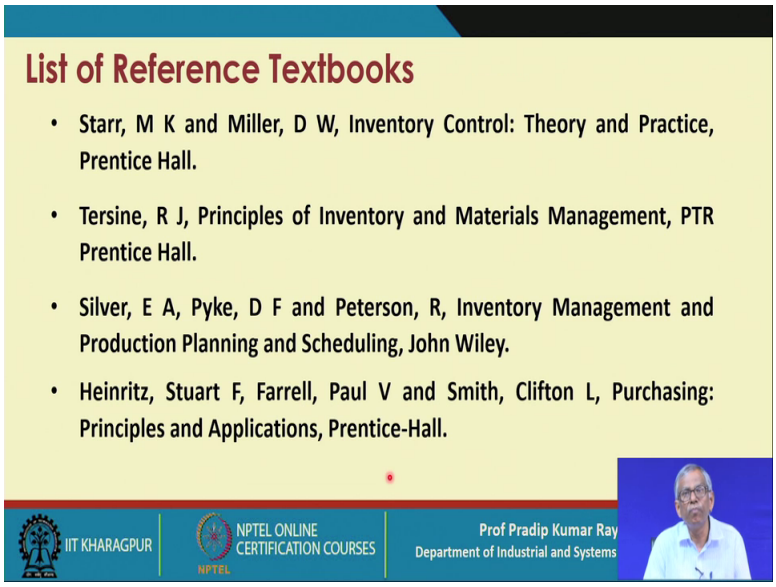

So, now you are in a position to so, analyze a particular situation. And obviously, in the next lecture sessions will be referring to a case study so.

Thank you.