Product Design using Value Engineering

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Lecture - 02
Product Design Steps and Product Analysis

Namaskar Friends! Welcome to session 2 of our course on Product Design using Value Engineering. As you are aware that we have already done a course on product design and development, and which has been fairly successful with two reruns. So, today, we will try to revise what we have covered in product design and development, because the course title is product design using value engineering.

So, first we need to grasp the basic fundamentals of the product design process, what is product design, what are the steps involved in product design, what are the types of analysis or characteristics of the products that we must take into account. So, initially we will try to understand the basics of product design maybe first two or three sessions, and then we will shift to the introduction of value engineering concepts in the process of product design. So, let us quickly start, and try to revise what we have already covered in product design and development.

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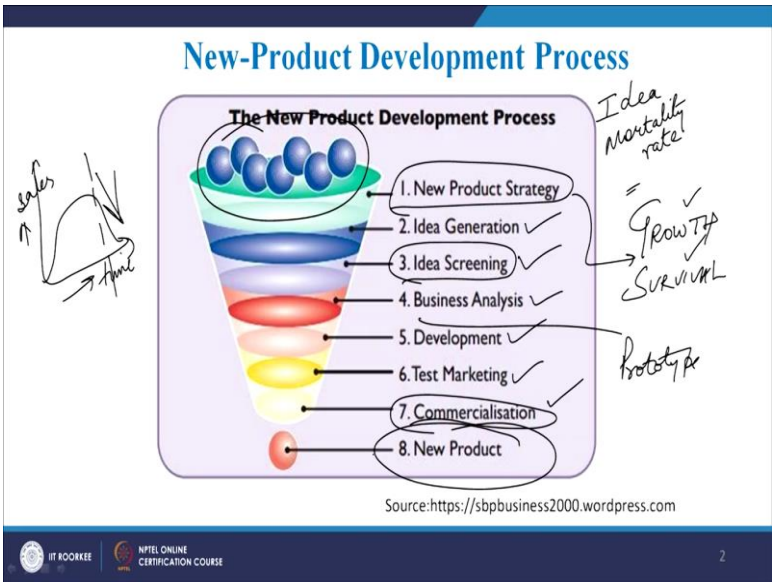

So, this you can see is new product development process. So, we see that we have to generate a large number of ideas. So, there is a term that we normally called as the idea

mortality rate. So, in idea mortality rate, the ideas keep on dying down, we keep on loosing the ideas that we have generated. Why? Because some of them are not able to pass the levels of scrutiny, sometimes the idea may not be technically feasible, sometime the idea may not be economically feasible, sometime the idea may not be feasible from the commercialization point of view.

So, there are different levels of scrutiny, different types of scrutiny, different types of screening criteria that we apply and therefore, we are finally, doing a funneling of the ideas and finally, very few ideas are able to be launched in the form of products. So, as you can see on your screen, the new product development process. So, there is a new product strategy we can see, there are number of new product ideas here.

And then the screening goes through where do idea generation for a new product. So, why do we need to develop new product? If you remember in yesterday's class, we have find tuned two words growth and survival. So, each and every company, each and every organisation has to grow they have to increase their business, increase their market share, increase their market presence.

So, each and every company has to grow many times it also becomes a survival strategy if you do not launch a new updated version of your existing product, you may be obsolete it from the market. Therefore, these two are the keywords for new product development process. So, for that we try to have a new product strategy that we want to come up with a new product.

Once, we decide on that we want to come up with a updated version of our product, once we finalize that, then we go for idea generation, number of ideas are generated. We try to explore the latest developments in terms of design, in terms of advanced materials, in terms of advanced processes, and try to see that how our product can be updated, how scientific now how can be introduced in our product. So, that our product is able to compete successfully with the competitors.

So, therefore, we try to develop n number of ideas, large number of ideas which can help us to come up with an updated version of our existing product or a completely new product. Once the ideas are generated, we go for idea screening, we try to screen the ideas, we try to evaluate our ideas, we try to find out that which ideas are more suitable for our product strategy or for our objective, for our goal, for our aim because already we

have decided that this is the niche product that we want to develop and for that we have generated large number of ideas.

So, our objectives, aims, goals are clear and for that we try to evaluate, screen our ideas that which one is best suitable for our goals. Then, we do the business analysis, we try to see, and we will see in the today's session that what are the various levels of analysis that we do for a product.

So, it can be economic analysis also, within economic analysis we may try to plan; we may try to prepare a business plan, we may try to see the break even analysis, we may try to see that how and when we will be able to be profitable when we launch this product, what kind of investment is required to start manufacturing of this product, what kind of new machines, new equipment, new manpower is required to launch this product in the market.

So, all that is business analysis and once that commercial viability of the product is established we try to go for the development. In development maybe one part, here can be the prototyping. So, we have to prototype first, and then after prototyping we develop the product, once it is developed, we do the test marketing, we try to get the customer or a select customer feedback.

For example, if movie has to be launched sometimes the producers, directors try to have a special screening for special guests. So, that is a kind of an example of test marketing where they want to feel get to have an idea that what can be the response of the viewers for this particular film. Similarly sometimes with some magazines you will see small pouches of some shampoo or some other FMCG product. So, the customers are asked to use that and give their feedback, so that is one example of test marketing

Once the test marketing is successful, the company goes for commercialization and when the product is commercialized all of you know it will be sold in the market, and in that case we prepare again the product life cycle as we have seen, we have on y axis, we take sales and on x axis, we take time.

So, in the commercialization stage we know that how the product or how the sales are varying over a period of time. And once the product sales start to dip again, we try or the

company tries to come up with the new product, updated product or the product with additional features additional functions as compared to the existing product.

So, it is a cyclic process, it is a continuous process and no company can sit with one product and enjoy the fruits of that product for its life time. All companies have to come up with new and new products based on the technological advancement taking place all around us. So, this is the most simple strategy for any product development process and why it is required these are the two keywords that is growth and survival.

Now, we have seen yesterday's session that there are failures, sometimes the products fail also. So, in order to develop successful products there are five characteristics that must always be taken into account.

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So, first one is the quality of the product, second one is cost, then the development time, development cost and the development capability. So, we have to be very focused, so we can see that there are three important catch words here. First is the quality, we cannot compromise with the quality of the product and there we get the basic idea of value engineering.

As per value engineering we will see, the definitions in our subsequent classes, but we will certainly be able to address this point that we have to provide the customer with a product which satisfies the functions for which the customer is buying that product, but

at a relatively lower cost, without compromising with the quality, performance, service reliability, durability, dependability of the product.

So, we have to provide the customer with a product which is high in quality, but low in cost and that is the basic idea, we can say, objective of performing the value engineering or analysis on different products. So, first thing is quality, we cannot compromise with the quality of the product. And as you can see, the two terms here, quality and cost, two are the most important things, and these will further lead us to the concept of value engineering.

So, these two things we have to take into account, and then, the time also is equally important. Why? Because the technological advancements are taking place, each and every company has the know-how of what is the technology that is happening. For example, in communication sector most of the companies that are making the mobile handsets have the knowledge that what kind of technologies being developed, what kind of apps are being developed, what kind of communication technologies are prevalent, and what are going to be prevalent in the next 20 years.

So, each and every company knows the direction. So, now, the time becomes important that which company is able to reach their or develop that technology or find tuned their product or adjust their products or tweak their products as per that strategy or as per that technology. So, time also is very important, so you have to be the first in the market with the new technology. So, similarly the development cost is also very important because when you are coming up with the new product, you have to spend money, there is a design cost associated with it, there is a development cost associated with the product.

So, if you spend a huge amount of cost in the development process, you have certainly the cost of the product will certainly be higher and therefore, you have to justify it with the technological advancements or the advanced features, functions that the product is going to offer to the customers. So, if it is offering number of features, functions which are not available with any other product, customers are definitely going to buy that product.

So, the development cost of the product must be justified in terms of the features and functions the product is offering, similarly the development capability. So, we must not

aim at developing a product or conceptualizing designing, developing, and commercializing a product for which we do not have the capability.

Many times you will see that the companies have ventured into different fields, but have not been successfully able to launch the products. Why? Because the companies had their capability, they had their specialization, they had their expertise in a specific domain only, but then they shifted their domain to some other area or expertise area, and were not able to satisfy the customers with their products.

So, each and every company must focus on their specialized area, on their specific area, on their capability. So, that they are able to come up with the advanced product. So, therefore, we can see that the quality, cost, time, development capability and development cost are important parameters which will govern the success rate of any organisation in context of launching the new products, which are successful.

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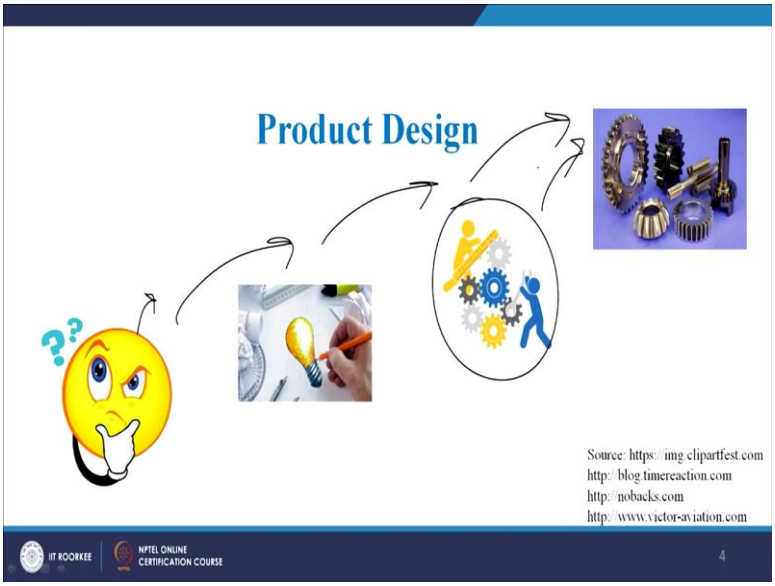

Now, we can see on your screen a product design process, a pictorial representation of what we have already seen. So, this is basically idea generation, conceptualisation, then maybe next stage is we try to make a rough idea of our product that how it is going to look like, how the product is going to be developed, what will be the shape. Finally, we come to some detailed specifications of our product and finally, the product is developed test marketed and commercialized. So, this is we can say step by step procedure in which the product is developed.

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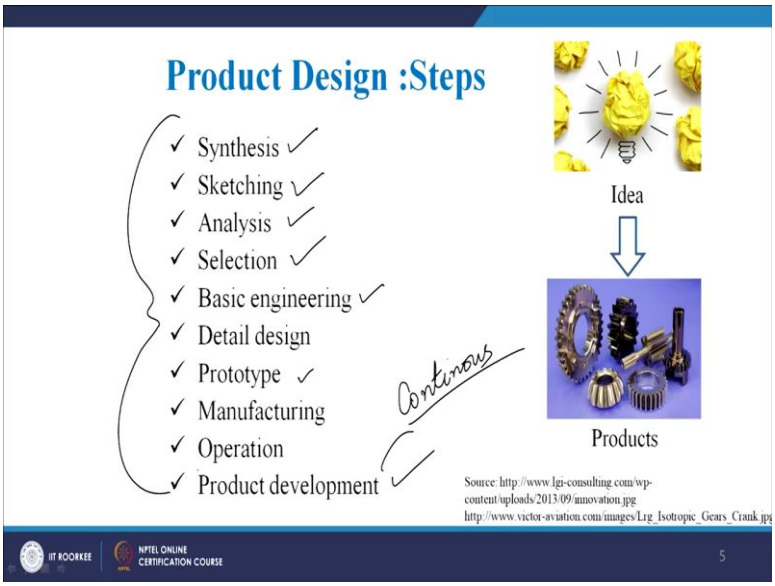

Now, these are the steps synthesis sketching, so as we have seen in the previous slide we tried to sketch whatever ideas are coming to our mind. Then, analysis is done their different ideas, so we analyse the ideas, select the ideas then, we do the basic engineering as we have seen in the previous slide, then, the detailed design is done, prototyping is done, then the product is manufactured it is operated and then again the product development.

So, product development has to be a continuous process for any organisation. So, you cannot sit idle once your product is in the market, a companies have to always be on their toes regarding coming up with new and new advanced product for their organisation. So, in different books you will get different steps involved in the product design process. This is a general idea of how a product design will take place or what are the various steps involved in the product design process. So, some of them may not be relevant for a particular type of a product.

For example, if you are developing a app. So, a mobile app may not involve many of these steps, but it is also a product if you are developing a product which has to be used in a banking sector for operating or issuing of automatically drafts. So, some of the steps that are mentioned here may not be relevant for developing that software or a platform for use or to be used in a banking sector.

So, many of the steps may not be relevant, but if you are trying to develop a tangible product for example, this stylus or a pen; obviously, all these steps may come in to picture. If you are trying to develop an advanced version of the camera that is recording this session, definitely, most of the steps involved here will come into picture.

So, these are the basic steps, we are just revising, we are not going into the details of each of these steps, we just to revise these are the steps involved in any product development process. Quickly, we will try to revise these, what is synthesis, which is try to develop different alternatives.

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Sketching, draw sketches in exact scale for different alternatives. Analysis; which we can see analyse different alternatives with respect to operate ability, maintainability, inspection, assembling, dismantling, cost parameters, production method.

So, here, we try to analyse that how the product is going to be operated by the customers, how it is going to be manufactured, how it is going to be assembled, how it is going to be disassembled, dismantled for service and repairs? So, all those questions that will come to the mind of a customer, when he or she is going to buy the product, we have to analyse, and we have to find suitable answer for this questions which are definitely going to affect the customer's choice of our product.

Then, based on the alternatives which are good, which are alternative will be good a alternative or a product design which is easy to operate, which is easy to maintain, which is easy to inspect, which is easy to assemble, which is easy to dismantle, which is cost effective, which is easy to produce. So, that particular alternative or idea will be taken to the next stage of product development. So, we will select the best alternative which I have already mentioned that which one will be the best.

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Then, the basic engineering will be done on that, we will prepare, the layout on a exact scale, calculate the strength of the component, select the proper cost effective material. So, material selection component design, part design, part assembly all these decisions will be taken at the basic engineering level.

Then, once this basic engineering level is done, we have to now assemble all the parts together, see how the assembly is going to perform, and in that case we will go for detailed design which will involve prepare the detailed engineering, drawing for each components. So, if for each component, we will have a detailed drawing to full scale and then finally, we will try to see that how the parts are going to be assembled.

So, it may not be a full scale drawing may be then if we are drawing may be for a building we cannot have a paper or size of the building; obviously, it will be scaled down to a scale, but then it has to be a specific scale, it cannot be just a rough sketch at the detailed design stage, at detailed design stage it has to be as per scale. Then, once our

product design is now ready in the form of engineering drawings, we will go for the prototyping process.

So, we will try to prototype and as you have seen in our course on product design and development, there are various rapid prototyping processes which are used these days such as, fuse deposition modelling, selective laser centring, stereolithography apparatus, laminated object manufacturing. There are different types of processes which can help us to make a prototype of our product as quickly as possible. Then, once the prototyping is successful, it is tested we will go for manufacturing.

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So, if the prototype is not made, then, follow the manufacturing steps and solve manufacturing problems and assembly problems if any. So, in any case if we are able to prototype successfully, we will directly go for manufacturing, if we are not able to make a prototype then, we will try to optimise our manufacturing processes. So, that we are able to launch a successful product in the market.

Then, once the product is launched in the market, we have to go for operations, we can see collect feedback during actual operation of the new product. If any problem exist try to provide design based solution. Also implement lessons in the future design, this is very important point because as I have already told that product design is a continuous process. So, whatever lessons, we learn from some problems in our existing product

those must be used as input, for improving the quality of our product or the product design of our product.

So, we can see, here, once the product is under operation, we will try to collect as much information as possible. Many times, you will see that whenever a product has to be launched before that the service engineers of the company they try to use the product under different service conditions, and try to see that how the product performs in given condition, and try to manipulate the design try to update the design in order to satisfy the specific needs and requirements of the customers.

Similarly, the last step is product development, if any modification can be done implement the same in the next generation product. So, next generation product means the company will, always keep on innovating, always keep on creating new and new products based on the feedback received for the existing product plus the new needs requirements of the customers that can easily be incorporated into the existing design. So, the inputs may come from the various sources, and the company will always like to include those inputs in the form of advanced, products or the next generation products.

Now, this is the first part that how the product design actually will take place, the second part is related to product analysis. Now, let us quickly, see that once our product design is being done, how we will analyse or what factors characteristics, we will keep in mind when we are designing our product.

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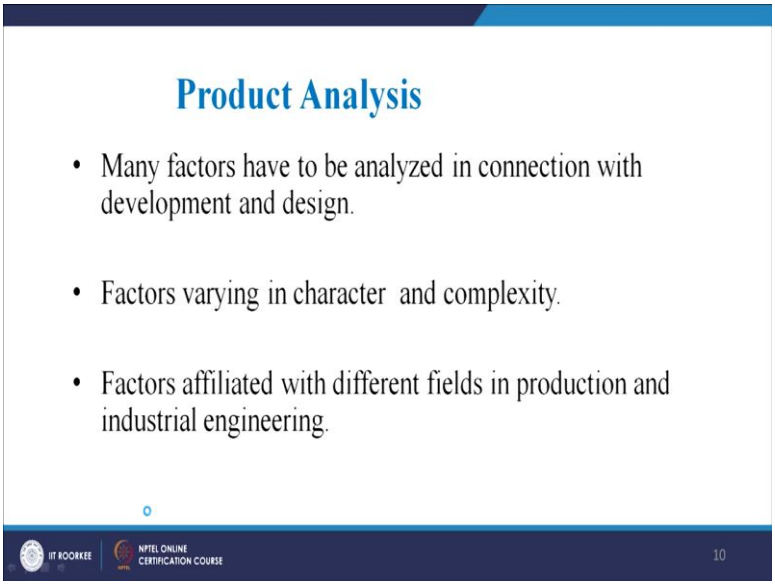

So, many factors have to be analysed in connection with the development and design. Factors these vary in character and complexity, some maybe very easy because once you are making a product for example, you want to check how it will be operated. So, it is not a very complex decision or a complex factor to be taken into account. Maybe you can take a product and start operating it and see that whether it is easy to operate or it is difficult to operate.

So, some of the factors maybe easy, some of the factors may be very complex in nature and may be difficult to analyse, then, the factors affiliated with different fields in production and industrial engineering. Sometimes some of the factors may be related to the actual manufacturing of the product that which process will be used, what kind of surface finish we can get, what kind of tolerance we can achieve with a particular process. So, all those are related to production engineering aspects of product design.

Then, sometimes we need to do the break even analysis, we need to find out that when we will start making, what are the fixed cost related to our product, what are the variable cost related to our product. So, all these will be the industrial engineering aspects of our product design process. Similarly the marketing, test marketing all these factors are the industrial engineering focus area for product development process.

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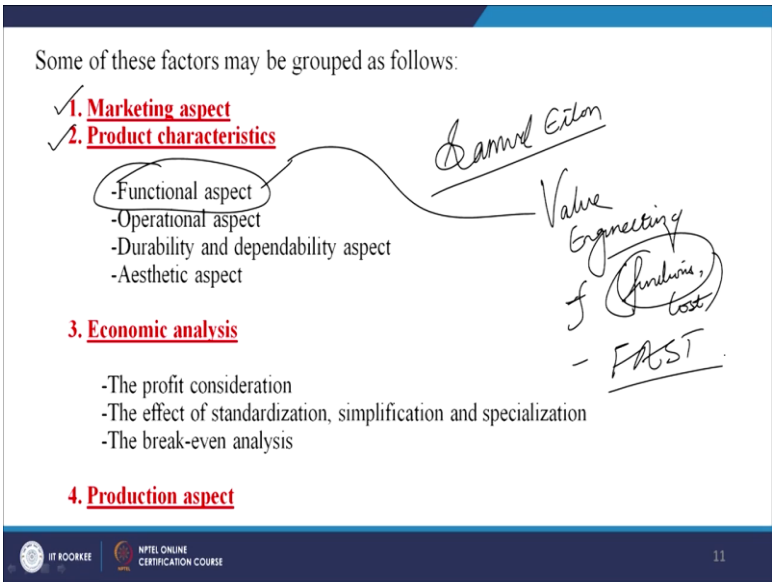

Now, quickly, let us see this are taken from a book on Samuel Elion production planning and control chapter number 2 product design and development. So, here, there all these

factors are clearly mentioned. So, some of these factors may be grouped whatever we have covered in the previous slide. So, we can have marketing aspects of the product, then product characteristics, in product characteristics functional aspects are very important.

Now, why are we are using this camera? For recording the session. Why I am using this stylus? For making a marks on the screen. Why I am using this slide changer? Change to change slides. So, therefore, each and every product that we use has got some function and for that as we have discussed in the previous session also, we need to analyse the function of each and every product. We need to focus on the basic function that why this product is being used by the customer or why the customer is buying this product and that is leads us to the term that is important to us in this course that is value engineering.

We have to see that why value engineering has to be studied in context of product design because we want to do the functional analysis, and value engineering focuses on main focus is on the functions of the product as well as the cost of the product. And therefore, value engineering uses the technique that we normally call as the fast technique which is functional analysis system technique.

So, therefore, functional analysis of the product is very important and that is what value engineering is going to teach us that how to identify the basic function of the product, how to identify the secondary and tertiary functions, how to relate the cost with the functions, how to try to achieve the functions without compromising the quality, but by trying to be cost effective. So, all these how cost cutting is different from value engineering, what is the value engineering cycle all these points or factors we are going to consider in during the functional analysis of our product.

We will discuss the value engineering in our subsequent sessions because our course is on product design using value engineering. So, all these aspects will be covered in detail in the subsequent sections, but when we are designing a product, we do the marketing aspects, we will try to find out who are our competitors, what is their product, what is a cost of the product, what are the functions of the product is offering, how it is operated, are there some difficulties in its operation, we try to analyse the customers product what is a target market segment for which we are trying to design a product, what are the unfulfilled needs of the customers that we want to satisfy?.

So, we have to find answers to a long list of questions in the marketing aspects of our product design process. Then, once we have identified that this is the target segment, this is the idea that we have, this is the type of product, these are the competitors who are already there in the market, and we try to figure out ideas.

Now, for those ideas we try to do the product characteristics analysis or we try to find out that what characteristics must be there in our product, so that we become competitive when we launch our product in the market and for that first thing is the functional aspects, second are the operational aspects as the name suggest we have to find out how easy is it for the operators or the customer to operate that product.

Then the durability and dependability aspects we have to see how durable our product will be. The aesthetic aspects that how good looking our product is sometimes the packaging also makes a difference. These days if we taken an example there may be five different cars of five different companies having the similar types of technical specification. So, the customer's choice may be because of the looks, because of the colour choice available. So, therefore, the aesthetics of a product also are very important.

So, we will try to see that these four characteristics are understood properly by the product designer. So, that he or she is able to design a product which is going to be competitive with the competitors product that we have already analysed in our marketing aspects. Once our characteristics or our spectrum of our characteristics is finalized, we go for the economic analysis and economic analysis, we see the profit consideration which we will definitely cover because each and every company is doing business in order to make money.

So, how the profit can be improved, increased for any organisation that is important, then all these characteristics are taken care of; obviously, the company will like to see that how and why, how and when we can make the profit. Then, we will see, the effect of standardization, simplification and specialization which means that we have to see that once, we are designing a product, what are the sub components which can be used as per the standards.

For example, there may be some nuts and bolts of specific size is which are available in the market. So, therefore, once we are designing our product, we must select those standard size nuts and bolts only or mechanical fasteners only in order to take advantage

of the cost. Similarly simplification must also be taken in to account and sometimes if we are having a very special idea, we can go for specialization that is we can go for a monopoly type of a product in the market.

And lastly, we do the break even analysis in which we try to see that when we will start to make profit, what is the area that we must focus on, what is the cost structure of our product, what are the fixed cost associated with our product, what is a total revenue expected over the period of time from our product. All that we do in the break even analysis and I think everybody has an idea about break even analysis.

And lastly we see the production aspects and in production aspects, we see the how the product is going to be made or manufactured, how the product is going to be assembled, whether the product is going to be made in four or three different parts or whether we are going to use the principles of design for manufacturing or design for assembly when we are going to make our product.

Then, using the principles of DFM and DFA, whether some design modifications are required in the product because we want to design a product which is easy to manufacture, which is easy to assemble and for that we need to subject our design to a set of constraints, to a set of criteria, and try to figure out that our design must be the best design from the manufacturing point of view, and for that there are number of guidelines which fall under design for manufacturing guidelines, design for assembly guideline

So, we try to use these guidelines when we finalize our product design. So, very quickly we will try to see all these aspects I will read it for you.

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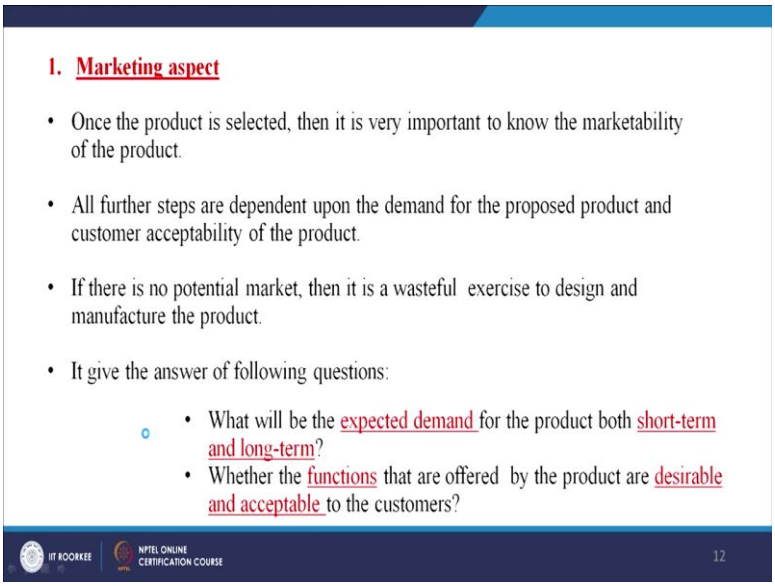

In marketing aspects, once the product is selected, then it is very important to know the market ability of the product all further steps are dependent upon the demand for the proposed product and customer acceptability of the product.

If there is no potential market, then, it is a wasteful exercise to design and manufacture the product which I have already explained. It gives the answer of the following questions. What will be the expected demand for the product both short term and long term? Whether functions that are offered by the product are desirable and acceptable to the customers?

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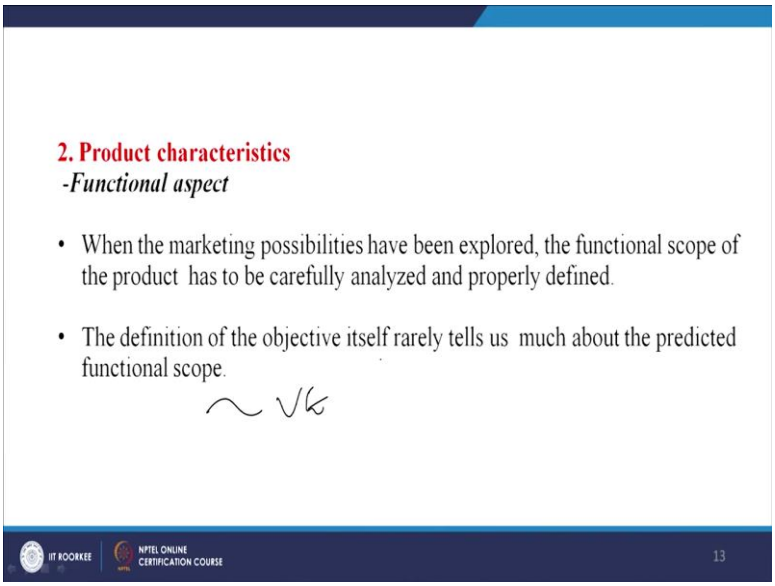

Then, that is the marketing analysis that we will do vis a vis the product of the competitor. So, whatever analysis or marketing aspects we have seen, we will always find answer to these questions in context of the competitors product, if there is any competition and if there is no competition, then, these will be answered in context of a new product design.

Then, the functional aspects as I have already told, when the marketing possibilities have been explored the functional scope of the product has to be carefully analyzed and properly defined, we will see how to define the functions of the product. Then the definition of the objective itself rarely tells us much about the predicted functional scope, and this we will try to answer with the concepts of value engineering.

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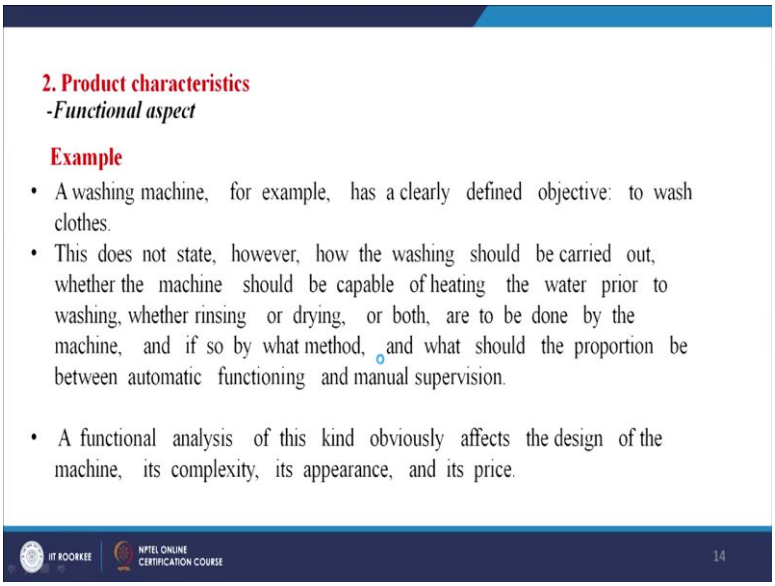

Then, in functional aspect let us take an example, a washing machine for example, has clearly defined objective to wash the clothes. This does not state; however, how the washing should be carried out, whether the machine should be capable of heating the water, prior to water rinsing or drying or both are to be done by the machine and if so by what method and what should be the proportion to between automatic functioning and manual supervision. So, the basic function, we see here is wash clothes and what is the product? The product is washing machine.

So, washing machine is to wash clothes, but there are other functions also heating or cooling of water, then rinsing or drying has to be done or not whether it will be automatic operation or a manual supervision is requires, so all these things also fall under the functional scope of our product. A functional analysis of this kind; obviously, a facts that design of the machine, its complexity, its appearance and its price, so this is important.

So, there are functions, and these affect the price and that is the basic concept of value engineering and that we want to study that how value engineering aspects help us to modify our product design, because all these functions are going to affect the complexity appearance and the design of the product. Then the operational aspects, the product is not only expected to perform its functions, satisfactorily. So, functions; obviously, it has to perform satisfactorily, but it should be easy to handle and operate; so easy to handle and

operate very important points. Sometimes the product maybe very good from the functional point of view, but layman finds it difficult to operate the product. So, the customer is not going to buy that product which is difficult to operate.

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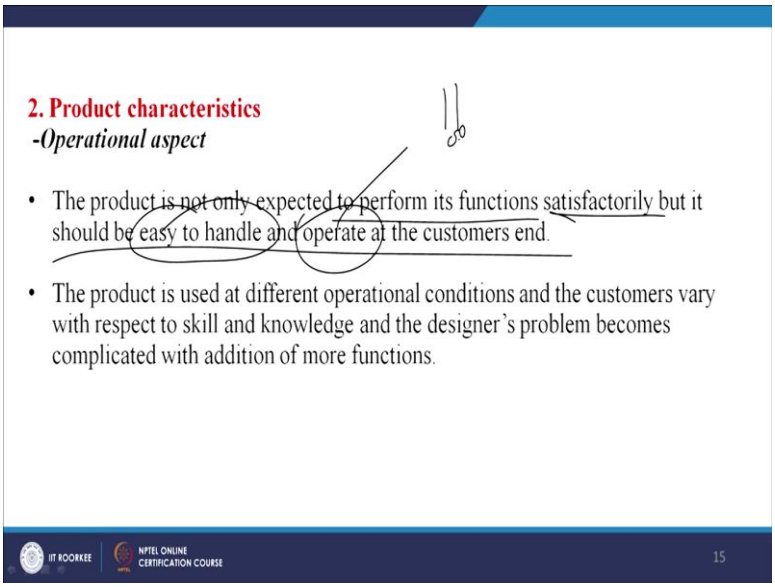

The product is used at different operational conditions, and the customers vary with respect to skill and knowledge, and the designers problem becomes complicated with addition of more and more functions. So, the product may have n number of functions, but the skill of the operator also, is a limitation which the designer must keep in mind while designing the product.

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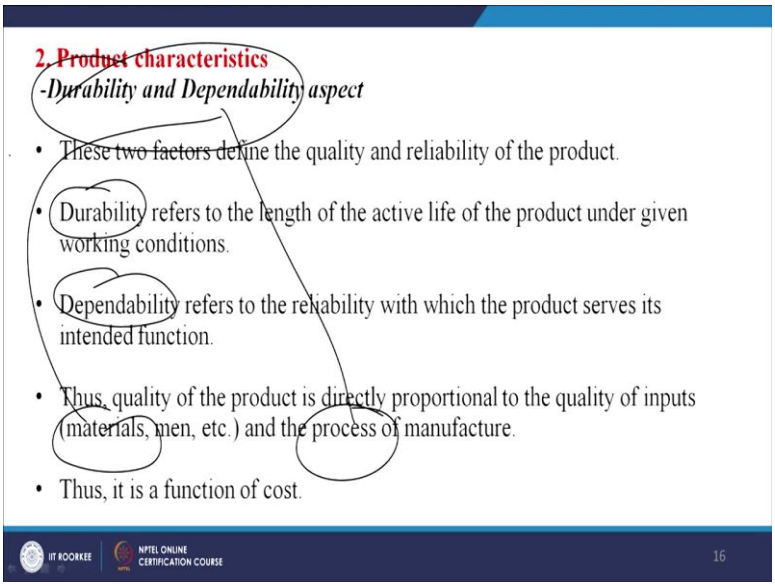

Now, durability and dependability are other aspects that have to be taken into account. These two factors define the quality and reliability of the product. Durability refers to the length of active life of the product under given working conditions. Dependability refers to the reliability with which the product serves its intended function. So, we can, you can have a go at these definitions and try to figure out the difference between the two which can be one of the assignment problems. Thus, quality of the product is directly proportional to the quality of inputs and the process of manufacture.

So, two things the designer must take into account, the materials and the process of manufacture. Why? Because both are going to affect the durability and dependability of the product. Thus, it is a function of cost. So, therefore, the durability and dependability aspects are also related to cost. So, we have seen the marketing aspects, then the product characteristics, in characteristics we have seen the functional aspects are very important, operational aspects are very important durability and dependability are also equally important and then the aesthetic aspects are also very important.

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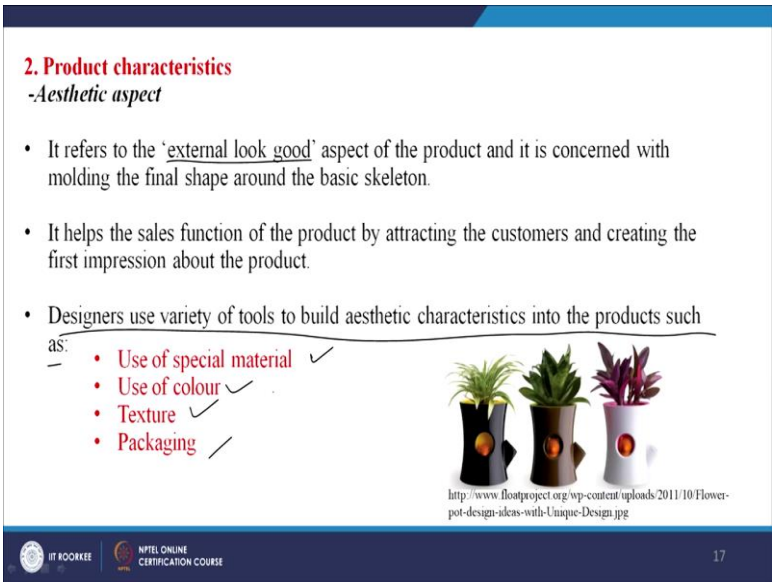

So, aesthetic aspects refers to how the product is going to look like, external look good it must be looking good, then, the designers use variety of tools to build aesthetic characteristics into the product. Now, how the designer have to keep the aesthetics thing in their mind? Use of special material, use of different colours texture packaging, so packaging also plays an important role for the product.

And therefore, we can see that the product should not only satisfy the intended function for which it has been designed, but it must also look good, and the product designer has to take into account all these aspects. The most of the times the designers will first like to satisfy the basic function for which the product is being designed, then they would like to switch on to how the product is going to look like.

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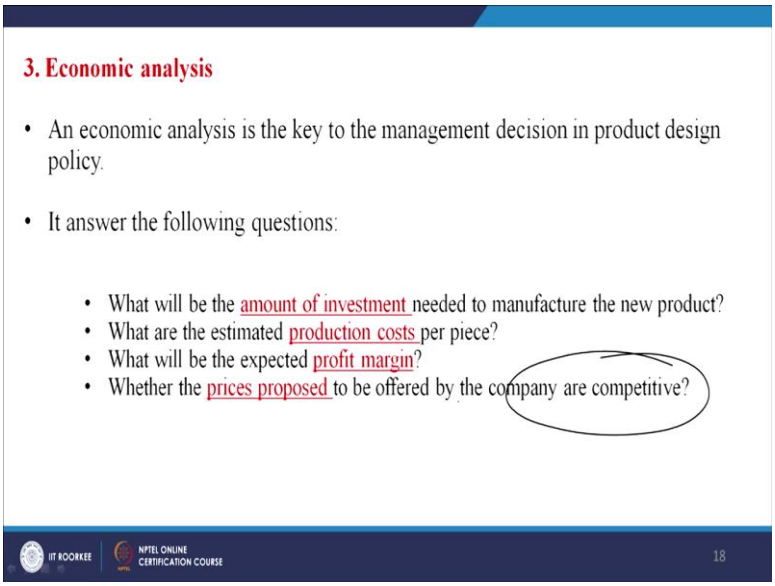

Now, finally, the economic analysis is done and economic analysis the key to the management decision in product design process or product design policy. It answer is the following question, what will be the amount of investment needed to manufacture the new product? Which is a very complicated question.

What are the estimated production cost per piece? What will be the expected profit margin? Whether the price is proposed to be offered by the company are competitive? So, already marketing research, in marketing analysis we have seen, who are our competitors what are the products they are offering, what are the functions that products offer, what is a cost of the product.

So, we have to see that what are the product, we are designing, what will be the price of that product in the market, whether it will be competitive or not or what are additional features functions that we are providing the customer with and whether these functions and features are going to be liked by the customers at an additional price? So, all these decisions have to be taken into account once, we are doing the economic analysis of our product.

And in addition we also need to find out how much investment is required, what are the new machines equipment that is required to start the manufacturing of our new product or we can make the new product with our existing infrastructure only, whether we need to set up a new plant for this product or the existing plant can be modified to

manufacture the product there is a long list of questions that we need to answer in the economic analysis stage of our product design or product analysis process.

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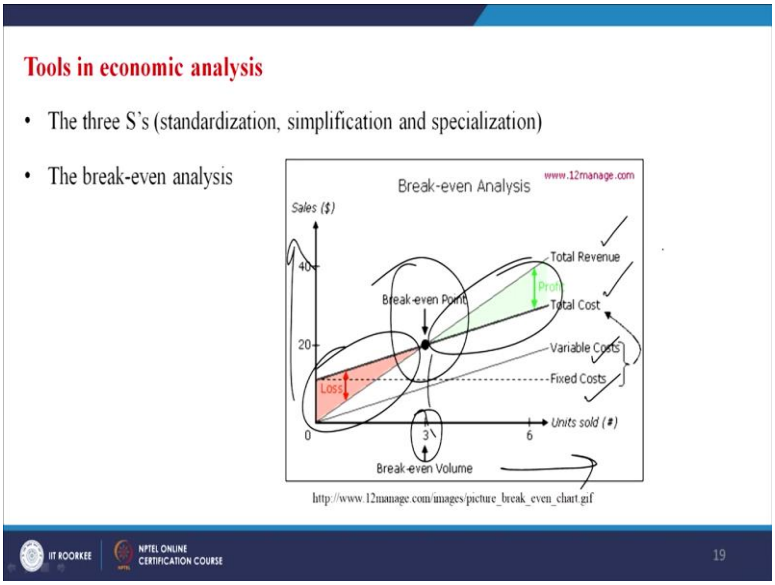

Then, one of the examples is the breakeven point all of you know this is a breakeven point that is mentioned here, on y axis we have sales on x axis we have the volume. So, we tried to find out what is the break even volume at which we will start making profit. So, the green portion is showing the profit, the red portion is showing the loss and it is also plotted with the fixed cost, variable cost, total revenue and the total cost. So, we are not going to go into the details of break even analysis which is a common topic taught in all almost all industrial engineering and production engineering courses.

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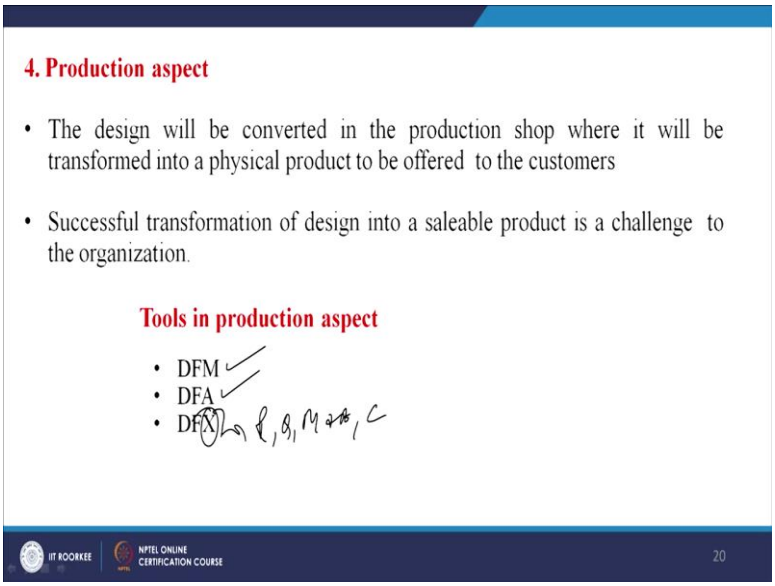

So, finally, we come to the production aspects and in production aspects the design will be converted in the production shop where it will be transformed into physical product to be offered to the customer.

So, now, we have seen that we will be analysing the product, we will be modifying our designs keeping in mind the functions to be offered, we will see it must be easy to operate, we will further modify our design to make it easy to operate, we will try to make it durable and dependable by selecting the materials, and the process is which will help us to make our product more reliable. Then, we will see the product is looking good or not, we will try to focus on the aesthetics which will include the choice of colours, texture, and packaging.

Then we will see the product must be economical how to package the product, so that the product is economical, when we will be reaching the break even quantity that will be analysed during the economic aspects. We will try to include the profit consideration in our economic analysis, we will try to include the features like specialization, standardization, simplification during the economic analysis. Once, our complete package is ready then we will go to the production stage in which our ideas, our design will be converted into the tangible product as the first sentence clarifies

The design will be converted in the production shop where it will be transformed in to a physical product to be offered to the customers. Successful transformation of design into

a saleable product is a challenge to the organisation. So, this is a important step in the product launch process because once you are able to produce the product economically you will definitely be able to make lot of profit in the market.

So, there are the tools as I have already told design for manufacturing, design for assembly and x can be reliability it can quality, it can be manufacturing and assembly, it can be cost, x can take any form. So, we will try to use these concepts when we are going to finally, manufacture our product, we will try to subject our design to a stringent criteria of DFM guidelines, DFA guidelines, DFMA guidelines, DF design for reliability, design for quality guideline. So, the product that we launch is able to meet the customers requirement that is first thing is or is able to compete with the competitors product. So, that the product is able to catch or to grasp significant amount of the market share.

So, this is a standard process for any product development and if we follow this process we try to mitigate reduce the risk of product failure. So, with this we conclude the today's session, then in our third session, we will focus on the product design, then other aspects of product design before switching over to the discussion on value engineering aspects in context of product design process.

Thank you.