Manufacturing Strategy
Prof. Rajat Agrawal
Department of Management Studies
Indian Institute of Technology - Roorkee

Module - 6
Lecture - 30
Product Profiling

Welcome back. So, now we are coming to the end of sixth week. And in all these sessions, we have discussed about how to develop a manufacturing strategy. And in last few sessions, we were discussing about process choices. And we discussed that how our process choices have moved from a 2-dimensional discussion to 3-dimensional discussion. And in our last session, we discussed about 3-dimensional view of process choice, where we have taken product, process and organizational scope.

And this was a new dimension added to our discussion. And based on that, we had 8 different types of generic manufacturing strategies. And when we discussed their feasibility, their economic usefulness, we saw that only 4 types of strategies are ideal strategies. Some of them are reasonably ok kind of strategies. And 2 we find that are not at all suitable for using.

And when we combine, when we mapped these generic manufacturing strategies with the discussion of Michael Porter's generic business strategies, we also saw that those strategies which are ideal from the manufacturing strategy's point of view are also giving us clear benefit of either cost leadership or differentiation. While those strategies which are not attractive, which are not so sound are also confused with respect to Michael Porter's strategy.

So, that was one of the important outcome of our earlier discussions. And in that discussion, the ultimate purpose is that, how do we make choices with respect to our processes. Because the choices with respect to process will also decide how are you going to invest in your infrastructure development. Because developing the manufacturing infrastructure is not a day to day activity. It is a long-range activity.

And when I say it is a long-range activity; so, I give you an example, that if you are developing a factory for making some automobile product. And you invest huge amount of money in procuring some kind of welding setup. Now, tomorrow, all of a sudden if your

marketing department says that this welding setup is not fulfilling the customer's requirement and we need to change our welding style. It is not possible for you to immediately change that welding setup.

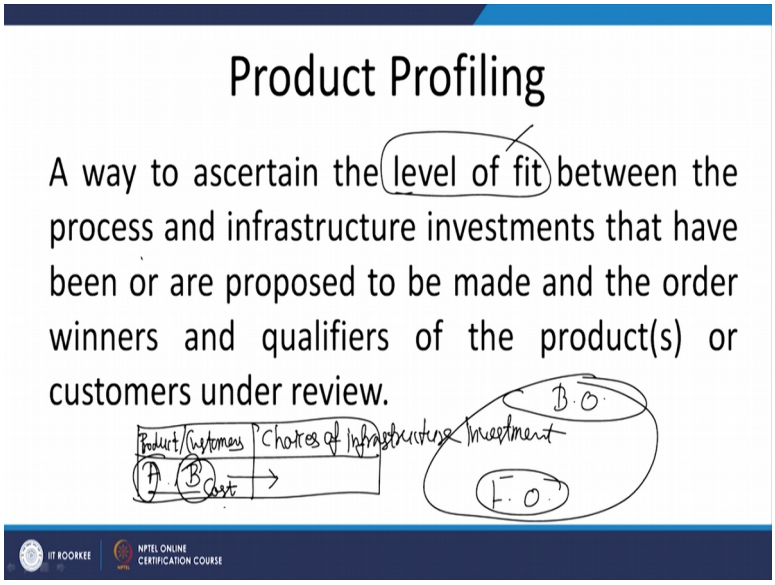
Because, you have invested huge amount of money in developing that facility. So, many a times, because market is moving at a much faster rate. Market is highly dynamic. And market is nothing to do with your investments in the operations. And therefore, there is lot of gap, there is lot of mismatch between the market requirements and the capabilities you have. And therefore, the discussion in this session, which is going to be the last station of this sixth week, product profiling.

That we need to continuously assess, we need to continuously review that whether our products and the processes which are required to make those product are in alignment or there is some kind of misalignment. And what types of future product requirements will be there. And accordingly, we need to make our investment decisions in the processes. If this alignment is appropriate, we can take the advantage of marketing and as well as the advantage of manufacturing.

If this alignment is not proper, whatever marketing will do, manufacturing will always remain reactive to it. And when manufacturing is reactive to marketing, the, both these functional activities which are most important for the success of organization will not be able to deliver the desired results. So, if we want that, marketing and manufacturing are in sync with each other, then it is very much required to see that whether they are aligned properly.

And when I say the aligned properly, it has to be seen in the actions. And this particular session will help us in doing that, that how we can see that things are in sync or they are misaligned. Now, where I am saying the product profiling that we are going to discuss in this session. That is a way. It is a way to ascertain the level of fit.

(Refer Slide Time: 05:38)



So, the level of fit is the important thing which we are going to discuss here. Because, if you are having the proper fit, the fit I mean to say; if you are having some kind of a business objectives and then your functional objectives. Now, your functional objectives totally be a subset of your business objectives, like this. If the functional objectives are going outside the business objectives, then we say that there is lack of fit.

So, what is this level of fit? Whether it is completely fit or there is lack of fit? That is a important thing. And where are we going to check this level of fit? Between the process and infrastructure investments that have been or are proposed to be made and the order winners and qualifiers of the products or customers under review. So, on 1 side, we have our; this type of table will help us in understanding.

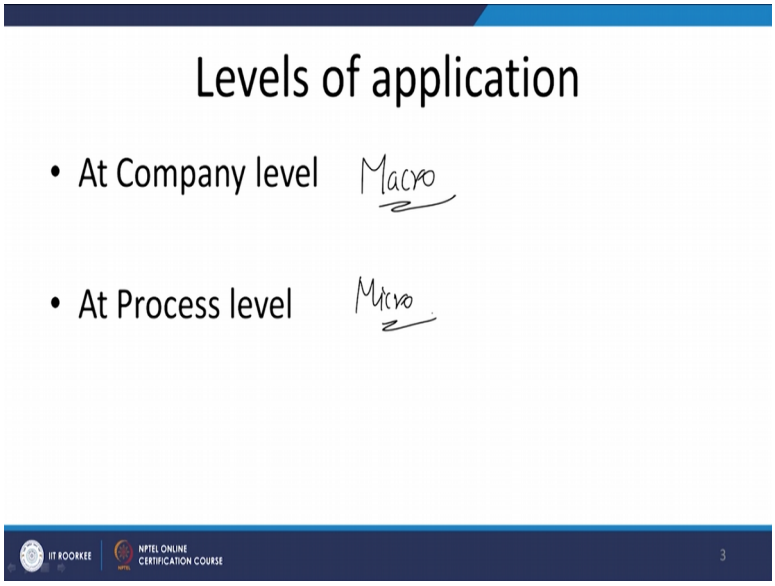
That on 1 side you have your products or customers and on the other side, you are having the choices of infrastructure investment. Now, if you are reviewing your product A or market B, then what type of choices of infrastructure investment you have made or you are proposing to made. And if those order winners and qualifiers which are required for product A or customer B. Because the review of product A and customer B is taking place on the basis of order of winners and qualifiers.

So, if these product and customer are requiring a order winner like low cost. So, your investment is in the direction of providing low cost products or providing superior delivery. If you are doing investment for getting superior delivery, faster delivery, then probably, the kind

of order winner or qualifier which your customer or product is demanding and the investment you are doing are not in proper fit. So, that is the meaning of product profiling.

That we need to do this type of review for all the products which we are having or which we are thinking to provide; all the markets which we are having or markets we are proposing to serve in future. So, for all those products and customers, whatever order winners and qualifiers are there and whether the investments of infrastructure, whether the investments in the process choices are in alignment to those order winners and qualifiers. So, that is the meaning of product profiling. So, once we have understood the meaning of product profiling, then we go to level of applications of the product profiling.

(Refer Slide Time: 09:01)



Now, product profiling can be done at 2 levels. The application of this concept is at 2 levels. 1 is at the company level. So, this is more at the macro level. This is the macro level application of this concept. And second is at the process level, which is, you can say at a micro level. So, you can discuss this concept of product profiling from an organization perspective, that is, the company level application.

And the company level application is put together all the process and all the product. So, you see whether we are going in the right direction or not, that is a broader understanding we develop in the company level application. So, like, if I take you to an example which is slightly of track. And if I say that, if I want to discuss that the initiatives taken by government of India are in the right direction as per the India requirement or not.

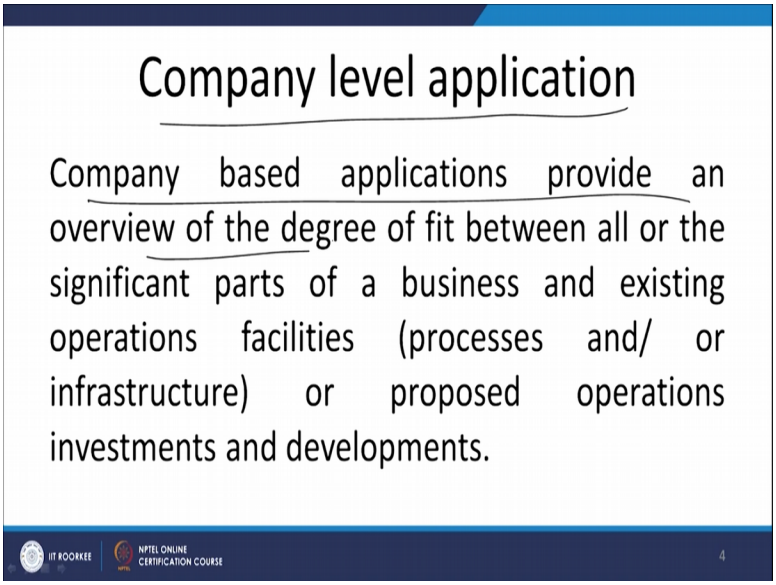
So, for an example, we say that education is a very important enabler for solving many problems of our country. And therefore, the investments done in Sarva Shiksha Abhiyan, investments done in Midday Meal kind of schemes are seen that how to promote the education. And therefore, because education we are considering as an important order winner and qualifier.

So, if education is important order winner and qualifier, so to make students come to the school or particularly going to classes, that is a important challenge in the rural area of the country. So, for that purpose, Midday Meal scheme is introduced. So, that investment is seen directly in light of providing education, primary education for large number of children of this country. Then, you cannot provide with your resources, education to each and everyone, particularly professional education.

So, almost all state governments are having the system of private engineering colleges, private management colleges, private medical colleges, etcetera. So, that is again an idea, an investment made in the right direction, so that private sector can also contribute in giving professional education to the youth of this country. So, that way, you can understand that how you can have a broader understanding at the company level.

That government of India is doing the right kind of investments, right kind of enabling acting, so that the education can be provided to the large population of this country. That is, the company level application of the concept of product profiling. So, education, we are considering as a product. And for that purpose, the investments are done in privatization of education, investments are done in the Sarva Shiksha Abhiyan, investments are done in the Midday Meal scheme. So, this is same thing which can be applied for the manufacturing level also.

(Refer Slide Time: 12:37)

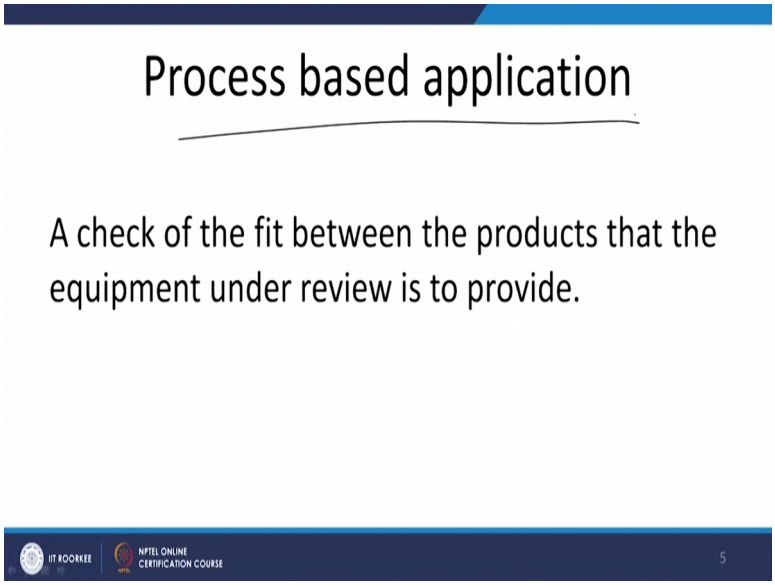


So, the company level application is a broader concept, it is a macro concept, where we take company based application provide an overview of the degree of fit between all or the significant parts of a business and existing operations facilities, processes and or infrastructure or proposed operations investments and developments. So, you have a broader understanding, an overview of degree of fit, level of fit between your most of the investments and the products or markets you are going to serve with your organization.

So, that is 1 broad level of understanding. The second is micro. Now, when you are doing; this same example we take which we discussed just now; the education and Midday Meal, education and privatization. So, when we are discussing these examples; so, that is the broader issue. But now, how to implement? Whether the privatization of education is achieving the objective of skilling or providing vocational education or providing the professional education to large youth of this country.

So, the response will be a mixed one. Some of us will say that, there are universities which are doing excellent work. And then, there are few responses which will come that, no no no no, these are shops, these are not doing any kind of quality education and we must do something, we must regulate so that these private educators do not act like a businessman. They do not understand anything about education. So, these are the mixed responses we get when we are discussing the micro level activities. So, that is the process based application.

(Refer Slide Time: 14:39)



That the product of providing the professional education through private players, whether it is delivering the correct product or not. So, when you discuss this level of detailing, this is the process level application that there is something wrong. The purpose of opening the private sector for professional education was that government of India does not have sufficient resources, state governments do not have sufficient resources.

And therefore, private sector can play important role in providing education to the large number of youth. But private players are taking it in a different way. Some of them are using it, that yes, it is our responsibility to provide quality education. But some of them are taking the advantage. And therefore, they consider this as a opportunity to make more and more money. And in that making money issue, the issue of providing quality education takes a backseat and that is harming the image of entire private sector and the objective is also not achieved.

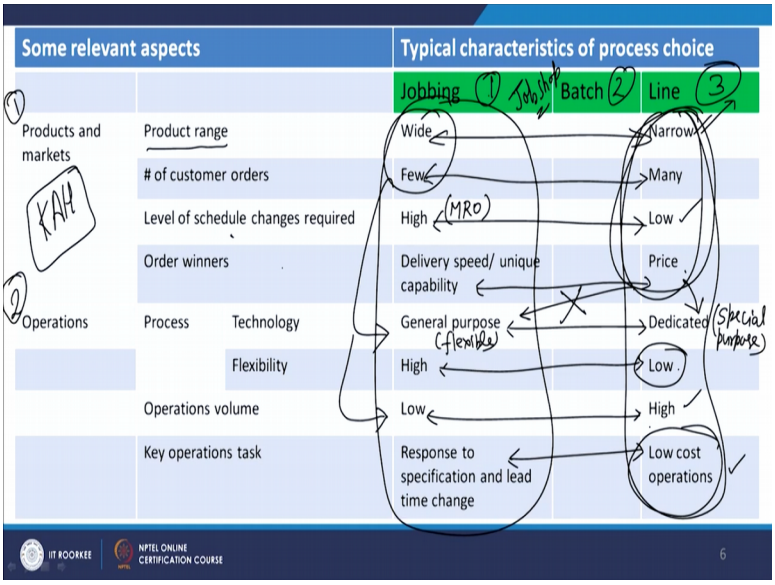
So, somewhere at the process level, though at the macro level, at the company level, the product profiling or the degree of fit is absolutely ok. But at the process level, that degree of fit or the level of fit is misaligned. There is some gap happening at the process level. Same thing may happen in the organizations also. That at the organization level, at the company level, our strengths, our investments are in tune with our future and current markets.

But when we see at the process level, there may be some kind of misalignments. So, we need to have the alignments, degree of fit, both; at the application level also, at the process level also and at the company level also. When the application at both these levels are having

sufficient degree of fit, then only you can have a properly aligned infrastructure investments which is required for particular order winners and qualifiers.

So, that is very important thing we all need to keep into our minds. Then on the basis of this 2 levels of applications, company level and process level application, let us see that what is actually happening in this alignment.

(Refer Slide Time: 17:21)



So, this particular table will help us in understanding the some relevant aspects and how we make that process related investments, infrastructure investments for those typical requirements. So, let us see that we have some relevant aspects on the basis of which we will like to see that what type of characteristics our process must have. And accordingly, we need to invest, we need to put our resources to achieve those characteristics of our process.

So, whether from the academics point of view, we have these 3 typical type of processes. Job shops, then batch production and then the continuous production systems. So, these are the 3 major type of production systems, process choices are available. And if you see the relevant aspects which are there, 1 is related to products and markets. And the second is related to operation. So, these are the 2 aspects.

1 is product and market related and second is related to operations. Now, when we are talking of product and market related aspects; so, what are we going to see in that? We see the product range. Now, product range has 2 options. Rather, it is not to say to 2 option, but a

complete spectrum is available from wide to narrow. So, you have either a wide product range or a narrow product range.

Now, type of customer orders. So, customer orders in terms of numbers. So, customers may have few orders or customers may give many orders on a regular frequency. If a customer is willing to hold inventory, so customer may give few orders. But if a customer who is not willing to hold inventory may give many orders. So, if you are having a customer who is following just-in-time type of inventory system, so, that customer will give you many orders.

But if a customer who is at a very distant location and it is not feasible for frequently fulfil the stocks of that customer, so, that customer give you few orders. Then, level of schedule change which are required. So, because of turbulence in the market, because of different types of requirements coming, because of some emergency orders coming all of a sudden which are not pre-planned. So, that is the reason of schedule changes.

Sometime, your priority customer; we all have a concept of key account holders. So, key account holders are there. And in that key account holders, if some priority order comes; so, you need to go for change in your production planning. And there can be again spectrum of regular changes and low changes. Whether your system has a requirement of frequent changes are there.

So, if you are serving a emergency customers. If you are a MRO kind of organization; so, in that case, you may have frequent changes in your planning. You may be required to change as per your emergency customers. And when you are not an MRO, when you are serving your routine products. So, in that case, there will be very low requirement of production changes. And you can go with your planned system.

And the order winners. Now, order winners can also change like from delivery speed to price. These are the different types of order winners. And you can also have in between some other order winners also, like quality, etcetera. Now, on the other side, if I see some operational issues. Now, in that operational issues, issues are related to processes. So, you have technology. What type of technology you want to take?

So, now in technology also you have options which are ranging from general purpose to dedicated. Dedicated are like special purpose. And general purpose are like flexible. So, whether you have flexible technology; and therefore, in the very next point, when I am saying the flexibility; because of general purpose, you have high flexibility. And because of dedicated facilities, because of dedicated technology, you have low flexibility.

You cannot change your processes very often, in case of this low flexibility. Then, operations volume, another important thing. Now, in this case, operations volume can also change from low to high. You have low operation volume, low volume of production. And here you have very high volume of production. And another important thing which is similar to order winners, the key operation task that what is the important role operation is going to play.

Now, the important role operation can play can also vary from these 2 extremes. Now, 1 extreme says that response to a specification and lead time change is 1 important duty, 1 important role of operation, 1 important role of our activities. And the other important role of operation can be to provide low cost of operations. That is another extreme role which you can have.

And obviously, when I am drawing all these arrows, when I am drawing all these 2 sides arrow, the purpose is that to emphasize that these are the extremes and you can have any position in between also. So, all these things are representing that I am talking in terms of spectrum. And you can have some intermediate positions also. Now, it is important to understand that when I am talking in terms of all these things; so, this supports my idea of job shop type of processes.

And when I am talking of all these types of issues, I am talking of line related organization, continuous production type of processes. Now, what can happen? How things can go wrong for you? For an example, you are developing some process, some facility where you are clear that you want to have a narrow product line, you are serving many customers, your schedule changes are also low and order winner is price.

You want to have winning on the price. But, for this type of issue, you develop a general purpose machine. For this type of product, for this type of system, you have a general purpose machine. This may go wrong. And therefore, it is important that, if you are having a

particular type of narrow system of production where you are making only 1 or 2 types of product designs, you should have a dedicated machine which can produce continuously same type of product.

And when the dedicated machine will produce continuously same kind of product, you will be able to take advantage of price. Otherwise, if you have a flexible system of production where you are using general purpose machines, you will not be able to achieve the price advantage and you will not be able to serve many customers. Both these things will not be possible. So, your this type of product profiling and if your investment are in the general purpose machine, it is going to lose the order, it is going to lose the advantage.

You cannot take the advantage of the manufacturing facility. So, here it is important that, if you are serving this type of market. So, this is my wrong choice and this dedicated machine where I am using a special purpose machine for producing this type of narrow product line, that is the appropriate choice, that is the appropriate infrastructure investment. So, that is what I want to have here.

I do not want flexibility, because my product line is very narrow. So, why should I have flexibility? So, I am particularly ok with a specific type of production system which cannot be changed regularly. Because I do not have many orders, I do not have frequent change of schedule and my products are also limited in number. So, there is no need of flexibility. So, why should I invest unnecessarily in the development of flexibility?

Because flexibility looks a very fancy word, therefore I may think of investing in the flexibility. But flexibility for my organization has no meaning. So therefore, it has to be very well defined thing that I must be able to say no to some of the things that I do not want to develop these types of capabilities. I do not want to invest in developing these competencies which are not my cup of tea.

So therefore, this particular discussion will help me. Similarly, if I am having an organization where I am having wide variety of products, I am serving too many types of products. And each order size is not sufficient. Each order size is of very small volume. So, at that time, I should not develop the dedicated facilities. I should be investing more in flexible systems. So,

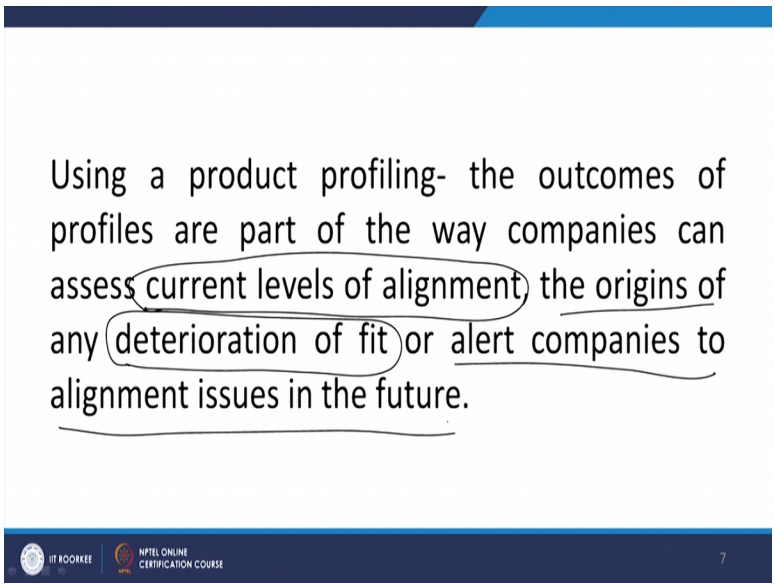
whenever a particular type of product comes, I will use the setting of my machine and by just changing the dyes, by changing the fixtures, I should be able to produce that type of product.

So, same machine should be able to produce large number of variety of products. So, the general purpose machines are more suitable for wide variety of products and where each order is of the limited number of a volume. So, wide and few; it will directly support the idea of general purpose machines and higher flexibility. Similarly, and this is also true. Because here you see the volume is also low. In this particular case, volume is also low.

So, each volume, each customer requires order in a smaller quantities. So here, my key operation task is that how quickly I am able to develop that flexibility in my system. How quickly I can respond to varied requirements of my customers. So, the orders are won on the basis of my delivery speed. That, yes, you ordered today a specific type of product; and tomorrow I am going to deliver.

And that is only possible when I have high degree of agility in my organization. If that agility is missing, I will not be able to do that. And in the case of this extreme, we say that, when we have a dedicated facilities. So, our objective is more related to low cost operations. So, we do lot of investment, we do a lot of planning, particularly related to maintenance management, particularly related to scheduling of activities, so that you get minimum cost of production of things. And therefore, the final word related to product profiling is that;

(Refer Slide Time: 30:26)



Using a product profiling, the outcomes of profiles are part of the way companies can assess their current level of alignment. So, this is the first important outcome that we are able to assess that what is our current level of alignment between the infrastructure, between the investments we are doing and the products we are serving. And the origin of any deterioration of fit. If at any point we are moving away from this level of alignment, so, that also can be identified, that can also be checked.

And then, we like to alert companies to alignment issues in the future. That alignment between our infrastructure choices, our investment in the processes and the type of market, type of products we are going to serve. So, that alignment is going to be a very crucial thing. And in some of the sessions, particularly in thirty ninth and fortieth session, we will like to discuss some of the examples, that how some of the organizations have achieved alignment and how some of the organizations lost alignment in between.

And after losing the alignment, how they lost the market. So, that real examples will also help us in understanding the concept of this product profiling. So, with this, we come to end of this session. Thank you very much.