

Manufacturing Strategy
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Module No. #02
Lecture No. #07
Ps of Manufacturing Strategy

Welcome, friends. This is the seventh session, of this course on, Manufacturing Strategy. We have understood, that there is a strong need, to use manufacturing function. And, not only manufacturing function, but other functional activities also, which can contribute, in the development of corporate strategy, for the organisation. We are focusing, more on operations strategy, in this particular course. Now, having understood that thing, in today's session, we are going to discuss, that what are the different perspectives, of manufacturing strategies.

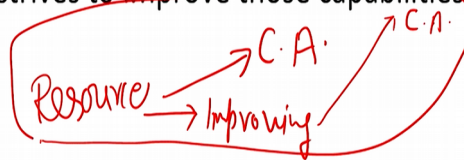
So, P stands for perspective. So, what are the different perspectives of manufacturing strategies, that we are going to discuss, in this particular session. Authors have given, various definitions of Manufacturing Strategy. Though, in our previous session, we also mention, that more literature, more work, is produced, in the area of marketing strategy, in the area of human resource strategy, and less work is done, in the area of Operations or Manufacturing Strategy.

But, whatever work is available, even in that, people have given, different views, different perspectives, different meanings, to the idea of Manufacturing Strategy. So, in this session, we will try to summarise, we will try to bring together, all those different perspectives, to come with a holistic idea of Manufacturing Strategy.

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A WCM is a firm that has:

- attained a high level of manufacturing capability;
- used that capability to gain competitive advantage; and
- constantly strives to improve those capabilities



Now, in our last session, we introduce the concept of World Class Manufacturing. And, we discuss, that world-class is something, which is best in class, which can set the benchmark. And, just to connect, this discussion with the previous discussion, you see that, world-class firms, World Class Manufacturing organisations, are those organisations, which have attained, a very high level of manufacturing capability.

High level of manufacturing capabilities, are with respect to quality, with respect to low cost, with respect to very efficient delivery performances, with respect to their ability to provide customised products, or you can say, flexibility. So, these are different types of manufacturing capabilities. So, World Class Manufacturing organisations, have attained, those highest level of manufacturing capabilities.

And then, the other important thing is, it is not just attaining those capabilities, but how to leverage those capabilities, how to use these capabilities, to gain competitive advantage. That is another important aspect. If you have, large amount of resources with you, that means, you are, at the Point Number-1. But now, how to use those resources, to remain competitive in the market, that is the Point Number-2.

And, you are not only making those resources, for your competitive advantage, but you are also looking continuously, to improve your capabilities, whatever resources you have. First, you have the resource. That is the Point Number-1. Resource, I am saying, for the manufacturing capabilities. So, you have these manufacturing capabilities. You are using these capabilities, for some kind of competitive advantage. And, at the same time, you are

improving these capabilities.

And then, with the improved capabilities, you are improving your stage of competitive advantage. It is a 3-Stage process. And, if you are having this 3-Stage process, you are a World Class Manufacturing organisation. You need to have, some very distinct, high level of manufacturing capability. Use those manufacturing capabilities, for your competitive advantage. And then, continuously try to improve on your capabilities.

For an example, companies like Apple and Samsung, they have the capabilities of innovation. They are continuously innovating. And then, once they have this capability, then the second thing, that using that capability of innovation, they are bringing products, to market at a faster rate. So, they are the leaders, of introducing new type of technologies into the market. And, they are continuously innovating more new products.

So, they are filing more patents. They are creating, more eyepiece. So, they are kind of World Class Manufacturing organisations, on the basis of their strong capabilities, of very high rate of innovation, or very high rate of research and development, or you can say, simply new product development. So, they have the capabilities of new product development. And, they leverage upon, this capability of new product development.

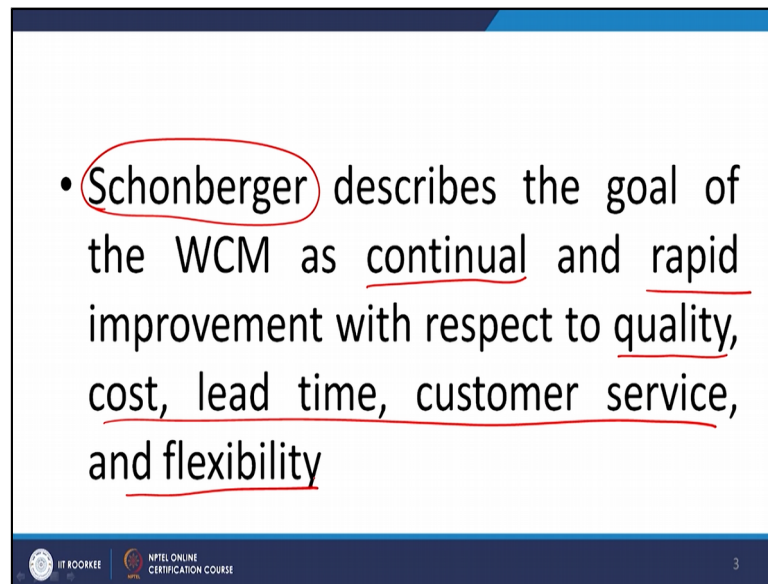
And, they are continuously trying to improve, their new product development capabilities, or you can say, they are continuously looking for, how to reduce the time of bringing new products to the market. So, all three things, you will find, in these organisations. Therefore, we call them, World Class Manufacturing organisations.

So, this is a very simple way to understand, that what is a World Class Manufacturing organisation. Now, once we have understood this broad, and I request all my participants, that all through this course, they must remember these three points, with respect to World Class Manufacturing organisations, about their distinct manufacturing capabilities, about their ability to leverage those capabilities, to gain competitive advantage.

And then, how are they using, the principles of Kaizen, to continuously improve those manufacturing capabilities. Now, we come to the next point, that how others have also defined, this World Class Manufacturing. Because, we want to develop, a different type of

perspectives, for Manufacturing Strategy.

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• Schonberger describes the goal of the WCM as continual and rapid improvement with respect to quality, cost, lead time, customer service, and flexibility

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Now, one of the very important contributor, in the field of Manufacturing Strategy, is Schonberger. Now, this Schonberger, is contributed heavily in the field of Manufacturing Strategy. Now, Schonberger defines, the goal of World Class Manufacturing, as continuous and rapid improvement. So, he is looking for, incremental or regular interval. And, he is also looking for, disruptions.

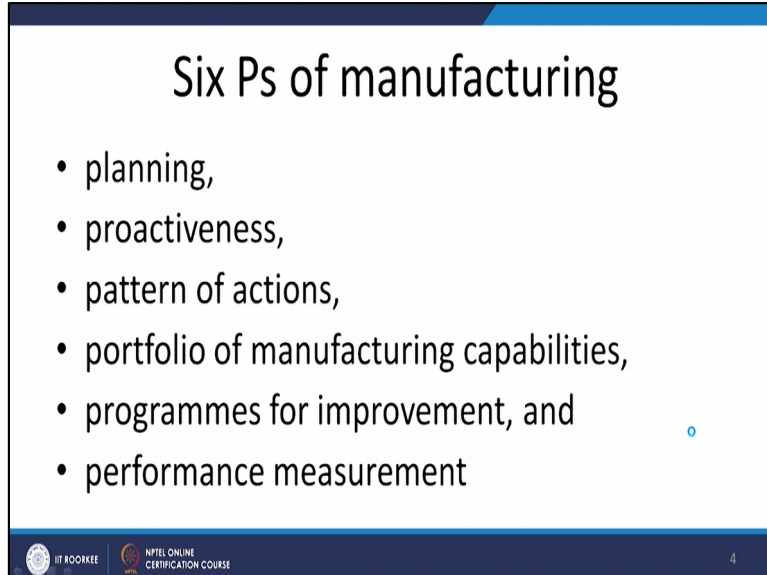
So, he is talking of, you need to go for continuous improvement, innovations. And, at the same time, you need to go for, rapid improvement. So, both the things, yesterday if you remember, we have a tortoise, and we have a rabbit. And, rabbit was representing, the rapid improvements, and tortoise was representing, the continuous improvement. So, we need, both these things, in our hand.

And, he is very specific, in mentioning the manufacturing capabilities, that you need manufacturing capabilities, in the area of quality, cost, lead time, customer service, and flexibility. So, he said, that the world class manufacturing organisations, are those organisations, which are able to continuously and rapidly improve, their capabilities, with respect to quality, cost, lead time, customer service, and flexibility.

So, these are the important areas. So, the previous point, we were discussing, that was more generic in nature, where we were talking of, all kinds of manufacturing capabilities. Schonberger gave, specific inputs, specific factors, with respect to quality, cost, lead time,

customer service, and flexibility. But, more or less, both of them are saying the same kind of idea, that you need to possess, and then you need to improve, these manufacturing capabilities.

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The slide is titled "Six Ps of manufacturing" and lists the following items:

- planning,
- proactiveness,
- pattern of actions,
- portfolio of manufacturing capabilities,
- programmes for improvement, and
- performance measurement

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Now, in the literature of Manufacturing Strategy, we find, 6 different types of perspectives of manufacturing. So, we call them as, 6P's of manufacturing. Please, do not get confused, with 4P's of marketing. 4P's of marketing, are a different type of concept, where you have 4 different tools available with you. And, by using those tools, you can design one effective marketing plan, or you can design one effective marketing strategy.

Here, the meaning of 6p's, is the 6 different perspectives of Manufacturing Strategy. So, in how many different ways, you can see the Manufacturing Strategy. So, that is the meaning of these 6p's. Now, the 6p's, which are available to us are, planning, proactiveness, pattern of actions, portfolio of manufacturing capabilities, programmes for improvement, and performance measurement. These are the 6P's of Manufacturing Strategy.

Now, we will see, in the coming slides, that what these different p's, mean to us. So, let us start, with the Planning-P. Now in a general management class, when we start any kind of management course, whether at the graduation level, or at the postgraduate level, we come across, the basic functions of management. And, the most fundamental function of management, is known as planning. So, planning is, we all understand, to see something in advance, to prepare for that thing in advance.

So, planning is doing something in advance, that this is going to happen, and to handle that, what we need to do. We need to go from, X place to Y place. And, for going from X to Y, what all things we need to do, that is the part of, or that is the domain of, planning. So, planning is a kind of a decisions for the future. You can understand, that planning is decisions for future. And, same thing applies, for the Manufacturing Strategy.

That you need to take some decisions, for future, with respect to manufacturing, that is the planning perspective of manufacturing. In other words, also you can say, that you have some manufacturing capabilities. And, based on those manufacturing capabilities, you want to decide the business strategy, or the corporate strategy, for your organisation, for the future, that is also the planning perspective of Manufacturing Strategy. So, what does it say?

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The slide is titled "Planning" and contains the following text: "Manufacturing strategy as a part of an essentially hierarchical corporate planning framework which assures a fit between manufacturing goals and actions and those of the larger organization." To the right of this text is a hand-drawn diagram in red ink. The diagram consists of three rectangular boxes stacked vertically, labeled "C.L.P." (top), "B.L.P." (middle), and "Op.St." (bottom). A vertical line connects the boxes from top to bottom. To the right of the boxes, a large red bracket spans from the level of "C.L.P." down to "Op.St.", with an arrow pointing left towards the boxes. There are also smaller arrows pointing left from the right side of each box.

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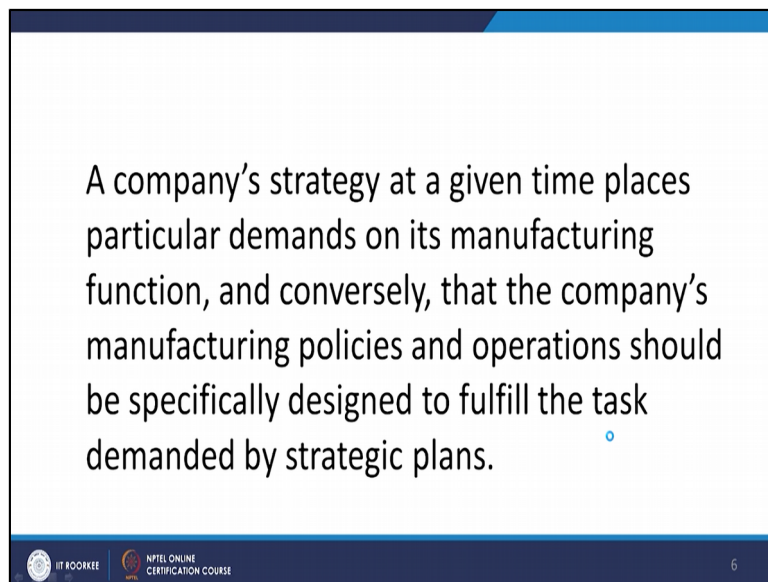
That it says that, Manufacturing Strategy, as a part of an essentially hierarchical corporate planning framework, which assures a fit, between manufacturing goals and actions, and those of the larger organisation. So, it says that, this futuristic vision of manufacturing, should be derived, from the larger organisations objective. So, it is part of a corporate planning framework. We have already discussed, in our previous sessions, that you have a corporate level planning, which becomes business level planning, and finally it comes to the operations strategy.

So, what does this planning frameworks says? That, it is a top-down approach. This is one way of looking the Manufacturing Strategy, that it is a top-down approach, starting from the corporate planning framework, to produce a fit, between manufacturing goals and actions,

and the overall organisations objective, which is defined by the corporate level planning. But, we have continuously argued, that this top-down approach, this is hierarchical approach, can be reversed also, if we really want to take, the advantage of our manufacturing activities.

So, the operation strategy, or the operation priorities, or operation strength, you can say, be an input to, corporate level planning, business level planning. At both these level, you can find, a very substantial input coming from, your operational level strategies. So, this is the futuristic that, how the future of manufacturing will be dealt, and how manufacturing can affect, the future of corporate level, and business level planning activities. So, that is the planning perspective of manufacturing.

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So now, you can see that, if more details we want to go, that a company's strategy, at a given time, places particular demands on its manufacturing functions. And conversely, that the company's manufacturing policies and operations, should be specifically designed, to fulfil the task demanded by the strategic plan.

So, we are talking of two-way communication, from corporate level to operational level, and from operational level to corporate level. So, when we have a hierarchical planning structure in my organisation, we expect that, operation strategy is guided by the corporate level strategy, and corporate level strategy is guided by the, or takes input from the operational level strategy.

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Proactiveness

The ability of a manufacturer to anticipate new manufacturing processes and technologies and to implement long-term programmes to acquire capabilities in advance of needs.

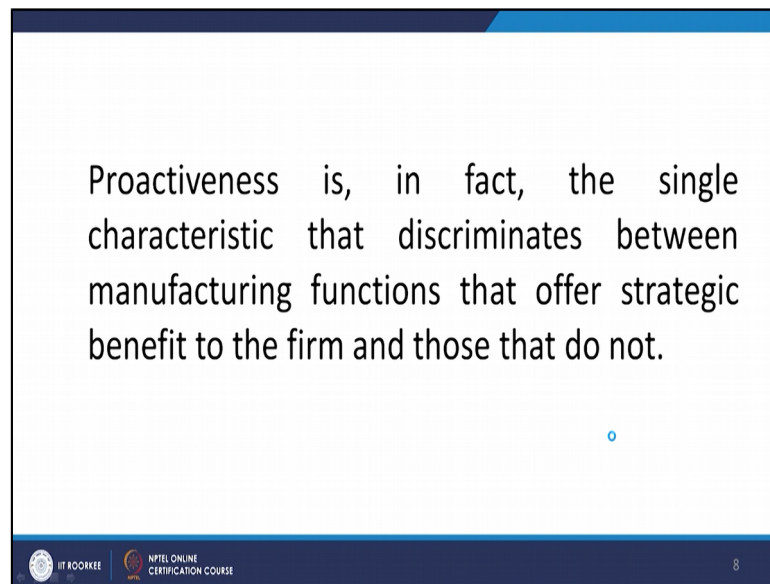
The second important P, to understand what is Manufacturing Strategy, is the proactiveness. We need to be, proactive. We have discussed, in earlier sessions, that so far, the role of operation in the organisation, is considered to be reactive in nature. Some function, maybe I can say, marketing function, is the most dominating function. And, based on marketing's requirement, we need to adjust our operations role. And therefore, it is known as, reactive activity in the organisation.

And now, even the top-level, middle level, or operation guys themselves, feel that, our job is to satisfy, the demand of marketing, our job is to satisfy, the corporate level strategy for the organisation. But, the perspective of proactiveness is, that the ability of a manufacturer, to anticipate new manufacturing processes, and technologies, and to implement long-term programmes, to acquire capabilities, in advance of needs.

Today, you may not be having the need. If you are doing something, when need is there, that is reactive. But, even you can foresee, that tomorrow the need may be there. And, you start procuring, you start developing, those manufacturing capabilities, in advance of needs, that is the proactiveness. And, in fact, most of the Indian organisations, lack these particular phenomena of proactiveness.

In our next session, the eighth session, of this course of Manufacturing Strategy, we will be focusing a lot, on this single aspect of proactiveness, that what is the state of organisations, particularly Indian organisation, vis-à-vis, proactiveness. But, it is one very important perspective of Manufacturing Strategy.

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So, proactiveness is the single characteristic, as I was mentioning, emphasising, that discriminates between, manufacturing function, that offer strategic benefit to the firm, and those that do not. So, if manufacturing function is proactive, it is offering the strategic advantage. But, if manufacturing function is not proactive, it will not give you the strategic advantage.

Then, you are always a follower. And, being a follower, you cannot enjoy the strategic advantage. So, that is why, it is very specifically mentioned, that proactiveness is that characteristics, it is that single characteristic, which is responsible, for gaining the competitive advantage, from the manufacturing.

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Pattern of actions

The observed stream of decisions or actions of a manufacturer over a period of time in nine categories: capacity, facilities, process technology, vertical integration, production planning and control, quality systems, organization, workforce, and new product development.

The third important P, is the pattern of actions. We say, that how to identify the strategy of an organisation. Now, the strategy of an organisation, can very easily be identified, if I see the pattern of action. How the actions are being taken, over a period of time. And, that dots, if I am able to connect, that will give me the fair idea, of the strategy of the organisation.

So, this point says, that in case of Manufacturing Strategy, we need to see, that with respect to capacity, of your facilities, the development of new facilities, process technologies, vertical integration, production planning, control, quality system, organisation, workforce, new product development. So, with respect to these various aspects, what type of decisions or actions, a manufacturer is taking, over a period of time.

And, those decisions, if you are able to track, if you are able to find some kind of connectivity, in those decisions, which are taken with respect to capacities, facilities, new product development, quality control, production process, etcetera, etcetera, you will be able to see, that what type of strategy, that organisation is following, for the operations purpose.

So, if you are investing, more money in developing new facilities, new warehouses, new plants, it means, you are either trying to increase, the presence in the market, or you are looking for economies of scale. Because, bigger size, is very close to economies of scale. And, when you are talking of economies of scale, it means, you want to reduce the cost of your product.

So, you want to acquire, you want to develop, the capability of low-cost manufacturer. So,

this is possible to see, this is possible to judge, by observing your actions, over the years. So, one way of looking Manufacturing Strategy, that what type of decisions, what type of actions, you are taking, with various manufacturing objectives.

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The slide is titled "Portfolio of Manufacturing Capabilities" and contains two bullet points. To the right of the text, there are handwritten red notes: "Cost" above the first bullet point, "Quality" above the second, "Deliv." above the second, and "Flex" with a red underline below the second. The slide footer includes the IIT Roorkee logo, the text "IIT ROORKEE" and "INTEL ONLINE CERTIFICATION COURSE", and the number "10".

Portfolio of Manufacturing Capabilities

- The portfolio of manufacturing capabilities reflects competitive strengths possessed by the manufacturing function and their relative importance.
- Generic manufacturing capabilities include: cost, quality, delivery performance, flexibility, and innovativeness

Another important P is, portfolio of manufacturing capabilities. What type of manufacturing capabilities, you have collected for your organisation? So, that is also, one important way, to see your Manufacturing Strategy. Now, manufacturing capabilities we discussed, may be with respect to cost, may be with respect to superior quality, may be with respect to delivery speeds, may be with respect to flexibility.

So, these are different types of manufacturing capabilities. When I say, the portfolio of manufacturing capabilities, so you are collecting, different types of capabilities. You cannot survive, only with one type of capability, that I am a low-cost manufacturer. But, with low cost, I need to have a reasonable level of quality, I have to have a reasonable level of delivery also, a reasonable level of flexibility also.

Since, I am a low-cost manufacturer, so I will never change my product design. Because, I am a low-cost manufacturer. So, in that case, even if I am highly efficient organisation, I am a low-cost organisation, but because I am not changing my product design, in no time, my product will become obsolete. And, once my product becomes obsolete, however efficient I may be, nobody is going to purchase my product.

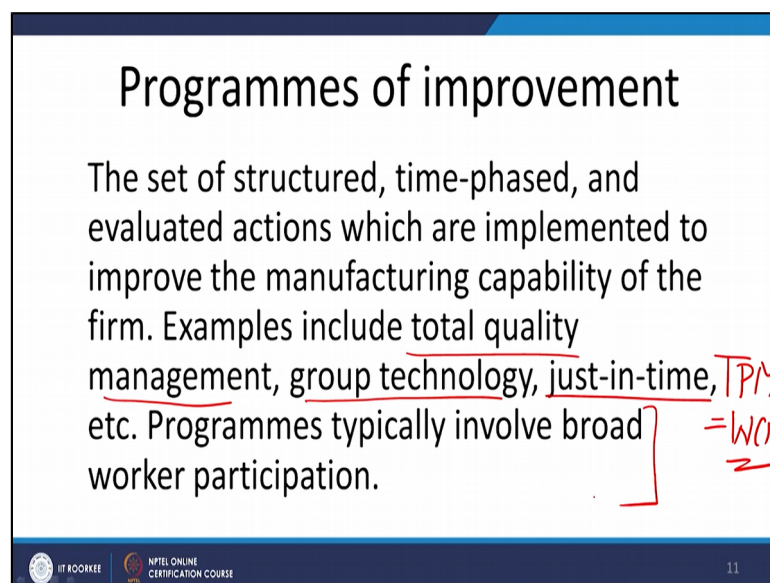
So, I need to develop, some efficiency, and some flexibility, so that, I have a portfolio of

capabilities of cost and flexibility. Sometime, I require portfolio of cost and quality. Sometime, I have quality and delivery also. I am a luxury apparel manufacturer. I am a designer. So, I am known for, very superior quality. But, many a times, I get emergency orders. And then, I have to fulfil those emergency orders, with the same level of quality. So, I need to develop the capabilities of, quality and delivery, in that case.

So, in today's scenario, it is not possible to survive with, only one type of capabilities. We need, more than one type of capabilities. Now, it is up to the organisation, the size of the organisation, the resources available with that organisation, that how many capabilities, I am able to keep, in my portfolio. More capabilities, more chances to get success, more chances to enjoy, that World Class Manufacturing status, for the longer duration. Now, we have discussed these, manufacturing capabilities.

And, we discuss that, we need to have a combination, of those manufacturing capabilities. In our coming session, we will discuss, that how to develop, how to create, these capabilities, within the limited resources. And, can we shift, one capability to other capability also. If I am having the capability of producing, high-quality products. So, if need comes, can that capability be converted into, the capability of flexibility also, or the capability of innovation also. So, those things, will be the part of our discussion, in coming classes.

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Programmes of improvement

The set of structured, time-phased, and evaluated actions which are implemented to improve the manufacturing capability of the firm. Examples include total quality management, group technology, just-in-time, TPM etc. Programmes typically involve broad worker participation. WCM

The slide contains a definition of 'Programmes of improvement' and lists several examples: total quality management, group technology, just-in-time, and TPM. A handwritten note in red ink indicates that 'TPM' is equivalent to 'WCM' (World Class Manufacturing).

Then, another important P is, programmes of improvement. That, what type of programmes of improvement, I am keeping. Kaizen is a very popular term, we all have heard many a

times, that is about continuous improvement. So, we also need to have, some type of programmes of improvement. For many of us, Manufacturing Strategy means, what type of programmes of improvement, I have.

Even if you remember, in today's session, the very first point, we discuss that, we need to have, manufacturing capabilities. And then, leverage those capabilities. And finally, we discussed that, we need to continuously improve those capabilities. So, that improvement of the capability, is related to programme of improvement, that how I am enhancing, how I am able to achieve, higher degree of capabilities, with respect to cost, quality, delivery, flexibility, etcetera.

So, you can have, some of the specific programmes of improvement, like TQM. Total Quality Management has become, very important programme of improvement. You can have, JIT, Just-In-Time type of inventory management system. You have group technology, for the layout designing, of your organisation. So, these programmes, you need to introduce, the organisations. Now, in India also, are taking TPM kind of improvement programme.

Total productive maintenance, where we call them as, some of the discussion say, that TPM is nothing but, World Class Manufacturing. So, Japan Institute of Plant Management, has introduced, the TPM awards. And, many Indian companies, are getting these TPM awards, regularly. So, this points to one idea, that more and more Indian companies, are understanding the importance of Manufacturing Strategy, and therefore are able to get, the TPM type of awards.

So, that is about, programme of improvement. One last point, for programme of improvement is that, most of these programme, should be broad-based, so that, you can involve, your lower-level employees also, into these activities of improvements. Without their involvement, into the improvement activities, however sophisticated, you have prepared the plant, it will be difficult to implement those plans. So, in all those improvement activities, we look that, how to involve my, all employees of different levels.

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Performance measurement KPI

The systemic means by which manufacturing is evaluated. Good performance measurement schemes are aligned with strategic organizational goals so that behaviour which furthers those goals is systematically reinforced

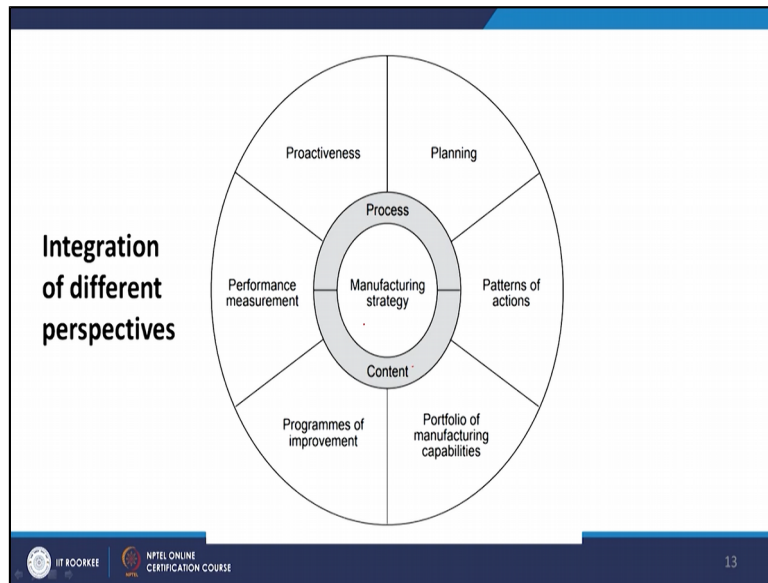
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Then, the last P, the sixth P of the Manufacturing Strategy, is about the performance measurement. What are your KPI, Key Performance Indicators. We discussed in our last session, that at the functional level, and at the business level, there are different types of KPI. And, because of that, functional priorities are different, and organisational priorities are different.

So, we need to have, some type of very systematic measures, through which, you can evaluate the manufacturing performance. And, this criterion of evaluating the manufacturing performance, should be in sync with the business level performance evaluation criteria. Then, you are able to see, that how my Manufacturing Strategy, how my actions related to manufacturing, are contributing in the development of the, business level objectives.

If you have different objectives, if you have different criteria, if you have different yardsticks, then it will be difficult, that investments done in the manufacturing, how these investments are giving return, in the business level activities. So, we need to have, those criteria, those settings, that can help us, in measuring my performance, at the manufacturing level. And, at the same time, those can help me in understanding, my business level performance also.

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So, with this, finally, if we conclude, we can see that, in this figure, different types of perspectives, different types of p's, all 6 type of p's, are put together. And, you see, that out of the 6p's, some P's are representing the process part of manufacturing, and some P's are representing the content part. So, like you can see, the manufacturing capabilities, and programmes of improvement, these are my content related p's.

And, planning and proactiveness, are related to process parts. And, performance measurements and pattern of action, are combining the process and content. So, with this diagram, you can see that, how these different types of p's, are helping us, in defining my Manufacturing Strategy concept. So, this gives you a very holistic view, to understand, what is manufacturing. So, with this, we come to end of the session. Thank you, very much.