Manufacturing Strategy
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Module - 8
Lecture - 39
World Class Manufacturing and India

Welcome friends. So, now we are coming almost to the end of this course on manufacturing strategy. We discussed about how organizations can leverage the strength of operations to achieve a competitive advantage. And in that process, we discussed about concepts of order winners and qualifiers. We discussed that how to develop an operation strategy which can leverage your operational performance.

And your operational performance finally becomes a competitive weapon. And in that, we discussed some methodologies, some tools; we discussed about various manufacturing strategy taxonomies. And finally, in our last 2 sessions, we discussed a very important example of Toyota car company. Now, in that Toyota example, we discussed the system of Toyota production the Toyota Way in which the importance on implementation was emphasized.

And as a result of that, we discussed that how the concept of design thinking is very close to the concept of Toyota Way of manufacturing. In that, it is not necessary that you know everything. But whatever you know, you must implement that important thing. And once you start implementing, you will see the positive result of it, you will learn from those results and you will continuously improve based on that.

It is not necessary that you run very fast. But you must have some kind of continuity. And based on these ideas, 4 Ps of Toyota Way was discussed. And we saw that how having a long-term philosophy. Then, focusing on your processes where your target is, how to eliminate the waste from the processes; how to make your processes more stronger, so that there is no need of inspection.

Then, how to involve your employees; how to give respect to your partners; and how to give new challenges to your employees and partners. And finally, try to solve each and every small

problem on your own. So, with the help of these 4 Ps, Toyota achieved a remarkable success. And not only Toyota, Toyota became a symbol. But it does not limit to Toyota only. It went to all Japanese organizations.

And now you see that Japanese manufacturing organizations are known towards their commitment for excellence. They are known for their commitment for high level of quality. And therefore, Japanese manufacturing holds a very significant place in the entire manufacturing landscape of the globe. Now, in this particular session, we are going to discuss that what is the situation of this manufacturing landscape in India.

Because, we know that India is traditionally an agrarian economy. And in last couple of decades, we have done exceptionally well in the field of service economy. And more than 60% of our GDP is coming from the services sector. So, where is the manufacturing sector in Indian economy? We are primarily tagged as agriculture economy. But the maximum component of our economy is coming from services.

So, manufacturing is not in a very competitive condition in India. And therefore, when we are discussing this world class manufacturing issues, we need to see what is the condition of Indian manufacturing organizations in that scape of global manufacturing. And for that purpose, we have done a small survey. And we will like to discuss the result of that small survey in this particular session, to categorize our various manufacturing organizations based on our survey.

Now, when we are trying to understand what is the manufacturing condition, what is the condition of manufacturing organizations in India, we are trying to survey these organization on the basis of 2 dimensions.

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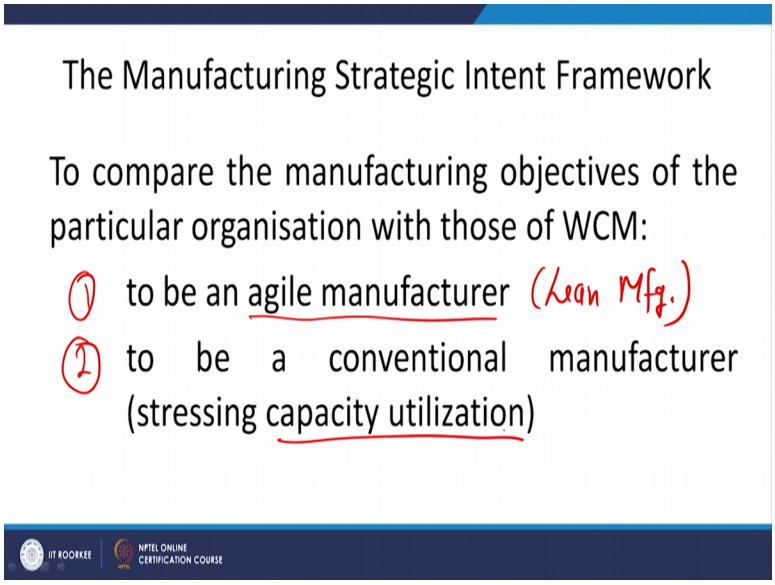

1 dimension is of being an agile manufacturer. Or you can say lean manufacturing. Or you can say the idea of elimination of waste. So, that is 1 dimension. The second dimension is about the traditional way of manufacturing. And this traditional way of manufacturing, as we have stressed that this is coming from the concept of mass manufacturing. And it stresses on the capacity utilization.

It stresses on production efficiency. It stresses on economics of scale. So, these are the idea of our conventional manufacturing. So, we have tried to do survey weather our Indian manufacturing organizations are trying to emphasize more on this efficiency aspects or on this agile manufacturing aspect to be more lean to be more agile, so that they can go into the direction of world class manufacturing. So, we can develop this type of 2 by 2 matrix based on these 2 dimensions.

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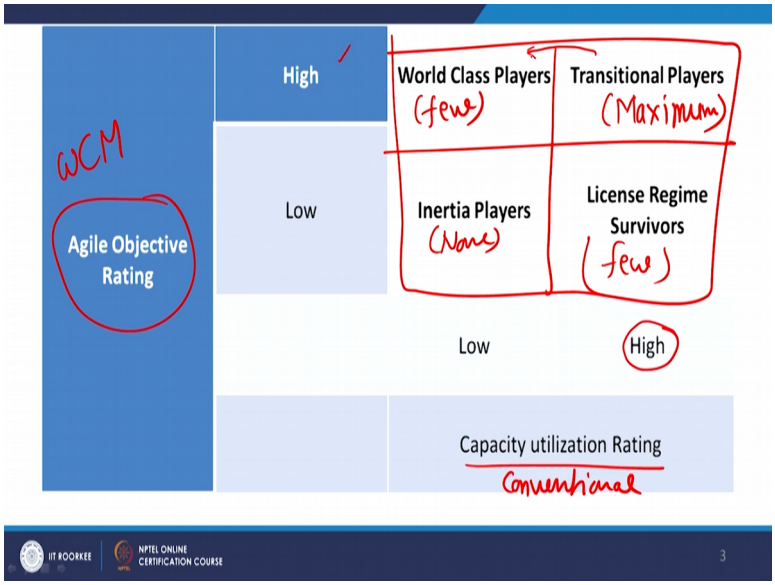

The 1 dimension which is towards the world class manufacturer. So, you can say that this agile objective rating is based on the world class manufacturing idea, because whether have discussed the Toyota manufacturing system or even before that also, we have discussed the concept of lean agile organizations. So, the very idea of lean and agile organization is that, these are the organizations which are continuously trying to improve their processes, so that they can eliminate waste from the processes.

So, these are the WCM kind of direction. The second is the conventional direction. So, this is the conventional direction. Now, in this conventional direction, we focus on capacity utilization. And on both these, you can have, whether you are focusing more on agile being or you are focusing low on agile being. You are focusing low on being a capacity utilization organization or you are focusing more on a capacity utilization organization.

So, with this, it becomes a 2 by 2 kind of organization, 2 by 2 kind of matrix, where we have 4 different types of organizations. And these are: if you are focusing on a world class manufacturing objective high and your capacity utilization is also high, then you are a transitional players. You are not a world class organization you are trying to become a world class organization.

Because, it is not possible that you focus on both these dimensions simultaneously with equal emphasis. So, high on agile and high on capacity utilization; so, it means you are currently on a high capacity utilization system. And now you are trying to move towards the world class

system, where you can focus on quality, you can focus on innovation, you can focus on delivery speed, you can focus on all these dimensions of being a agile organization.

So, most of the Indian organizations which we surveyed; so, maximum of them falling in this category of transitional players. Around 80% of the organizations in our survey are these types of organizations, where their conventional thinking is very heavily loaded on their minds. But, considering the globalization picture, considering the competition coming from MNCs, these organizations are now trying to shift their focus that how we can be more agile and less focused on this capacity utilization.

But most of the Indian organizations are like that only. Now, the second type of Indian organizations are those who have started focusing only on this high world class manufacturing objectives. And some of them have even got the status of being world class. For that purpose, organizations like Tata Motors, Tata Steel, Sundaram Clayton; these are the organization where they are more involved in high agile objectives.

And there is less focus on low capacity utilization. And these are some of the organization, but very few. These are very few in Indian context, those going to the world class status. Now, there are another category of organizations which is available in India. These are those organizations which are still living in pre-globalization, pre-liberalization era. And these organizations are still obsessed with their high capacity utilization kind of objectives.

They are less involved, they are less interested in the agile related objectives. But they are more obsessed with the objectives of high capacity utilization. And some of the organizations which we could see in this particular category like the organizations, sugar factory, refineries, paper mills; these type of organizations are still living in this license regime category. And these organizations are reducing. We could observe that.

But, still there are some organizations which are in this license system. And they are still in that hangover which was available to Indian manufacturers pre 1990s. So, those type of organizations are also there in India. And then, 1 more category we defined. But fortunately, we did not identify, we could not get any organization in this particular category. So, none of the organization we could find as the one focusing neither on agile objectives, nor on production efficiency.

So, no organization, because these types of organizations are those organization where you have some kind of monopoly, oligopoly kind of system. So, these organizations are neither focusing on the capacity utilization nor they are worried about the agile objectives. But now, we are becoming a liberal market, we are becoming a global market. Therefore, in none of the sector we could identify this type of organization.

Even some of the organization which are in the defense sector, where you can say that they are still protected as law of the nation. But because that sector is also becoming slowly and slowly open to private sector; so, in that also we could see that there is a movement either to the upward or towards the right side. So, fortunately, none of the Indian organization could come under the inertia kind of organization.

Maximum number is the transitional player. After that, we have some organizations which are in the license systems and which are moving into the world class organization. So, this is a situation of the Indian organization. Now, we need to see that how more and more Indian organization quickly move from this transitional player status to world class player status. Because, that is the only thing which can help Indian manufacturing to survive.

Otherwise, the way manufacturing sector is moving and the way IT implementation automation is happening in the manufacturing sector, it is very difficult for Indian organizations to survive in that competitive market. So, the second part of our discussion is that only that how Indian organizations have adopted IT in their manufacturing activities.

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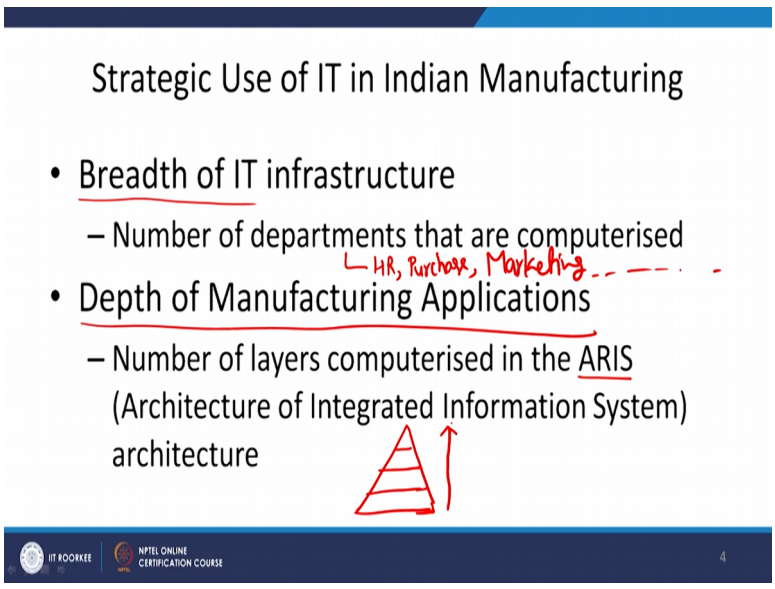

So, when we talk of IT implementation in the Indian manufacturing system; so, we are trying to judge this particular aspect on 2 dimensions. 1 is breadth of IT infrastructure. And the second is depth of manufacturing applications of IT infrastructure. So, when I am saying the breadth of IT infrastructure, so, how many departments are actually got computerized. You have let us say 1 department which is HR, another department which is purchase, then another department which is marketing; so, similarly there are many more departments in your organization.

So, out of these departments, how many departments have been computerized? Normally, if we see that 50% of the departments are computerized, then we say that your breadth is high. If less than 50% of the departments are computerized, then you have low breadth. Second is the depth of manufacturing application. And to determine the depth of manufacturing application, we have used the concept of this ARIS.

Now, ARIS means architecture of integrated information system. Now, in this architecture of integrated information system, we have this type of pyramid, where we have different layers. Now, these layers are going in the direction of value addition. So, at the lowest level, you have simply some computerization in your organization. But when this computerization starts providing information which is of high value.

So, as you go for more and more integration from 1 department to another department and then you start using IT for strategic decision making at the top level, you can say that you have good depth of IT in your organization. But many a times, IT means simply keeping few computers in 1 or 2 departments. So, you are using computer only for some desktop publishing work; you are using computers only for some database management things.

So, that is not the good depth. So, it is quite possible that organization may have a very good breadth of the IT application. Many departments in your organization may have computers, but these computers, this automation may not be used for higher level decision making. So, in that case, I can say that depth is not sufficient. It is also possible that you have only 1 department where computers are there.

But you are using those computers for some strategic decision making. So, here, the breadth is limited, but depth is high. So, that type of classification is possible. And based on this 2-

dimension issues about the breadth and depth of IT infrastructure in your organization, we have this type of 2 by 2 matrix.

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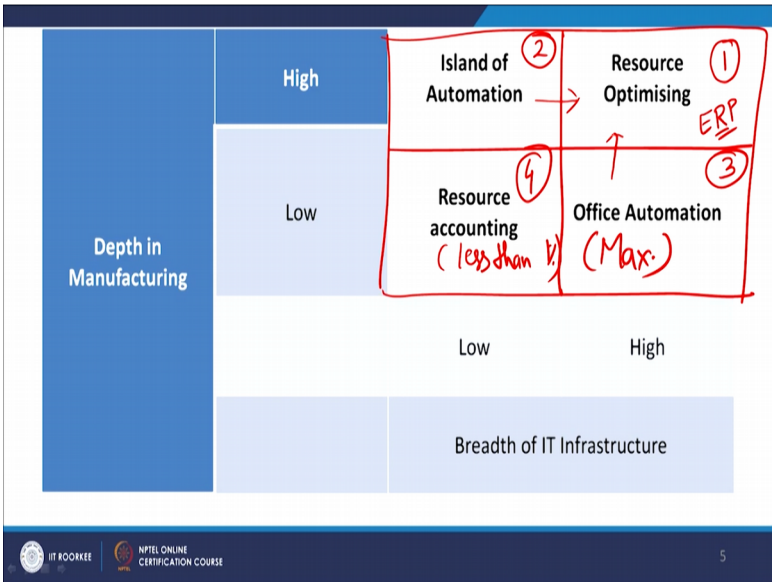

Now here, 1 dimension is about depth. So, how you are using IT for strategic decision making with respect to manufacturing activities? And the second dimension is about the breadth of IT infrastructure. How many departments are having the computerization? And based on that, we just discussed about what is the meaning of low and high involvement of departments and use of IT for strategic decision making.

We can have this type of 2 by 2 matrix. Now, you see that, 1 type of organization where you have large number of departments, more than 50% of the departments are having computerization or having automation. And at the same time, these automated systems, these automated departments are using IT infrastructure for their strategic decision making. So, these are the resource optimising organizations.

So, in our case, when we want to use IT for manufacturing, we want to develop organizations like resource optimising organizations, where they can have good number of departments where computers are installed. And at the same time, these computers or these automated systems are helping us in advance decision making. So, you can say that, systems like ERP, these type of systems are used for getting your resource optimization.

Few years back, Indian organizations were having some kind of hesitation in implementing ERP. But now, considering the global importance of manufacturing, the emphasis given by

Government of India and some of the small players, small vendors which can offer you customized ERP solutions. Now, good number of Indian organizations even at the small and medium enterprises level also, we are going for resource optimising kind of organizations.

Now, the second type of organizations are islands of automation. Now, these are those organizations, where in 1 or 2 particular departments you have installed computers, you are using some softwares. But these are not integrated with other departments. For an example, I have a flexible manufacturing system. So, in my manufacturing system, I am using computer aided manufacturing, computer aided design.

But my other sections, like the purchase, the warehouse management are not linked with the system of FMS. So, this type of system is known as island of automation. I may have a completely automated system in my warehouse management. But that warehouse management automation system is not linked with my financial departments. So, I know what type of materials are available in my warehouse, but the processing of bills, generation of invoices is not automated.

So, that is, some of the activities are there which are highly strategic in nature. But I am not able to extend the scope of these activities, therefore I say that this is island of automation. So, that is the second type of organizations which are possible. Then the third type of automation is office automation. And most of the Indian organizations, maximum number, we surveyed, we found that they are coming under the category of office automation.

Most of them have some kind of accounting software. Some of the organizations even have inventory management softwares. Some of the organizations have salary management softwares. So, these type of some kind of low level automation is happening. But with this low level of automation, they are not able to do any strategic decision making. So therefore, depth in manufacturing is not much.

Though, in 3, 4, 5 departments, we could find the availability of the computers. But these availability of the computer is only limited to first or second layer of ARIS framework. These are not going into much depth, where you can use these computer for some kind of strategic decision making. And then, we have the last category of organizations. That is, resource accounting type of organization.

So, you are not at all interested in taking any strategic advantage of IT implementation in your organization. So, if this type of organization is there, you just keep computers which is shifting some of your manual work into the computer database. So, beyond that, you are not taking any strategic advantage. So, these you can say are hopeless type of organizations. Though, they are very few; we could not find around, you can say less than 1% organizations in our survey, came under this category of resource accounting.

So, this is again good thing that organizations are understanding the strategic importance of use of IT in manufacturing. But as I mentioned that most of these organizations are doing more office automation work with IT infrastructure. And very few organizations are going for resource optimization. But, during our interactions with these organizations, we could feel that organizations have understood the importance of IT.

And slowly and slowly, whether you are presently the island of automation or you are using for office automation purpose, you are trying to move towards resource optimization type of organization. So, there is a silver lining, there is a hope that IT will be used more strategically in Indian organizations. Now, to understand this discussion of use of IT, we have 1 more way of classifying the organizations we surveyed. And that is the; on this side we had;

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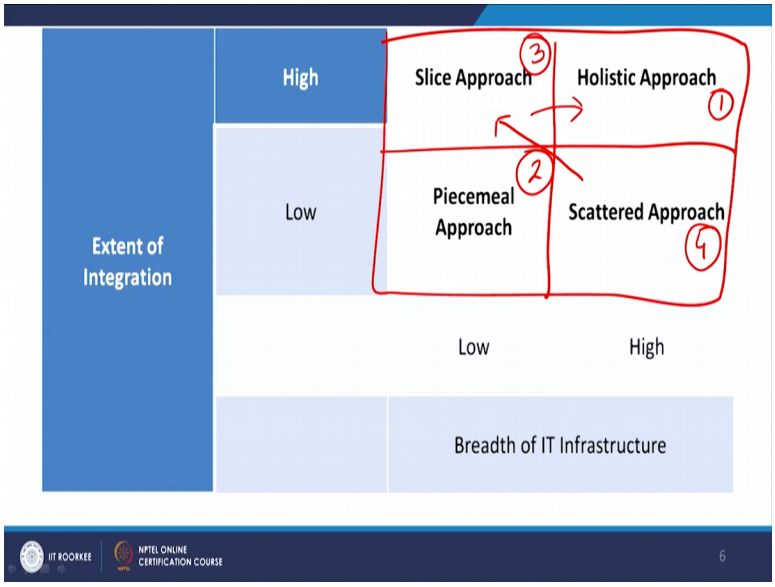

In our earlier discussion, the depth of application in the manufacturing. So, same way, you can understand the extent of integration of various IT departments or various activities which are related with IT. So, here also, you have a 2 by 2 framework. And in this 2 by 2

framework, you have on 1 side extent of integration, which can be low integrated organization or highly integrated organization.

And on the other dimension, you have breadth of IT infrastructure; how many departments are linked; how many departments are having the automation. If less than 50% of the departments are automated, it is low breadth. And if more than 50%, then it is high. Now, on this basis, you have the most organizations which we should try in this world class manufacturing system. That extent of integration, as well as breadth, the number of departments which are having the automation.

And if both these are on the higher side, we say that we are following a holistic approach. So, this holistic approach where you are using, you are leveraging the information. That is the meaning of holistic approach. Now, what happens many a time, you are asking your vendor same type of information again and again. For an example, your 1 vendor is there. And that 1 vendor is registering for supplying a particular product to you.

So, you ask about the registration date, you ask about GST number, you ask about pan card number, etcetera, etcetera. But now, when you have placed the order and now you are going for giving payment to that vendor, you again ask that vendor, please supply all these information. It means you are not leveraging on the information available to you. And this is just a very simple example.

But, this type of thing you will find happening in almost all Indian organizations. We are asking repetitively same type of information. And when we are asking repetitively same type of information, it means, we do not have holistic approach. Rather, we have a piecemeal approach. Where we have limited IT application in our various organizations. And they are not integrated. So, each functional activity is requesting to give separate data.

So, if I am in educational institute, so, I am fulfilling some criteria for academic award. So, I need to give the complete detail. Now tomorrow, I am looking for some sports related award, then I again need to submit the full data. Then day after another, I want to go to U.S.A. for some conference, again I need to give complete data. Because these 3 activities are linked to 3 different departments.

And there is very little automation and there is no integration. And therefore, we all are working on the piecemeal system. So, many of the Indian organizations we surveyed are having this piecemeal approach. Whenever there is a need, they will do some kind of local automation. Otherwise, the way they are working, they keep working like that. Then the third is slice approach.

Now, in slice approach, we have integration of data. We have integration of our IT requirement within a particular department. Because this slice approach is very much similar to island of automation. So, you have IT application in few departments of your organization. But here you have a very good integration from top to bottom. So, slice approach need to be converted into the holistic approach.

If you can apply same system, same slicing for other departments. So, it can easily go from slice approach to holistic approach. And then, you have scattered approach. That is the fourth. Where you do not have any kind of system. And in this particular type of arrangement, someday, without any planning, you have automated 1 department. Tomorrow, you have automated some other department without any focus that how are you going to completely automate your organization.

So, depending upon individuals initiative, that in 1 department some good person is there, who is motivated, who wants to do something new for the organization. So, he or she gets it computerized. So, if you see the Government of India's working many a time, you will find this kind of scattered approach where we do not have a proper vision, a proper planning and things are happening in a scattered manner.

So, this way, you will not be able to leverage the advantage of IT for your strategic thing. So, it is possible that form scattered approach, you go to this slice approach. And then from slice approach; because then, in 1 department at least, you are able to use the IT for strategic making. Because you are already present in many departments. Scattered approach, your IT is already present in many department.

So, it is very easy for you to go into the depth in those departments. So, that is implementing the slice approach effectively. And then, obviously, from slice you can move to holistic approach. So, this way, the IT can be used effectively in the organization. And the other

important thing, the finally, if I see that how Indian organizations can use IT for the world class manufacturing. So, we need to see after this discussion that there are 3 dimensions of IT application in manufacturing. 1 is the breadth, how many departments are automated.

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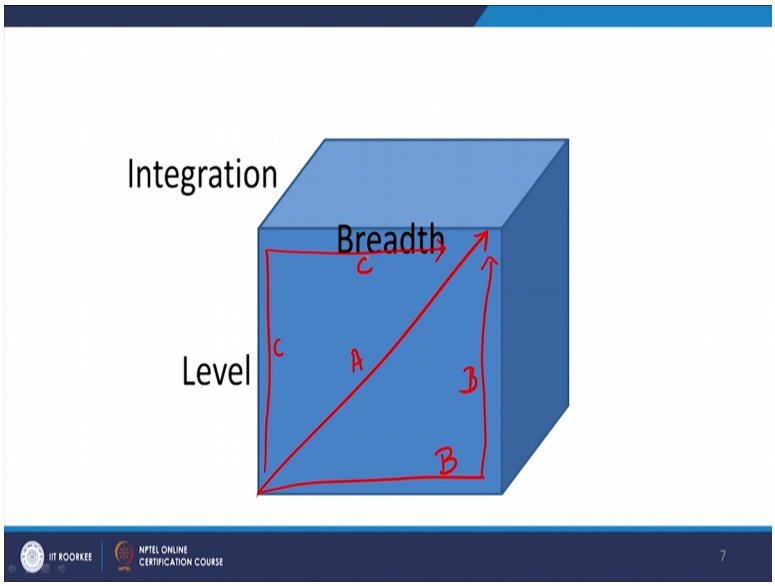

Then the level, that how many layers are involved, how many, how much depth you have of the manufacturing application. And third is the integration. That how these departments are integrated with each other. So, these are the 3 dimensions. And it depends that how are you moving? It is quite possible that you can take this path. Some of the organizations can take this path. Some of the organizations can take this path.

So, different organizations can take different path. But the ultimate objective is that, we need to have more number of departments in our organization where automation is done. And then, this automation should be used for the strategic thinking, for the strategic decision making. And that is possible when you have integration of data from 1 department to another department.

And since we are having EDI, electronic data interchange. You have concepts of ERP coming very strongly in India. So, we are hopeful that Indian organizations do adopt IT for the benefit of their manufacturing excellence. And with this, we come to end of this session. Thank you very much.