

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

**Module - 8**  
**Lecture - 40**  
**Achieving World Class Status**

Welcome friends. So finally, we are coming to the last session of this course on manufacturing strategy. The course on manufacturing strategy is a combination of many disciplines. We discussed about human resource management; we discussed about strategic management; we discussed about quality management; we discussed about maintenance management; we discussed about some of the important things from marketing management also.

So, this course has borrowed knowledge from so many other disciplines. Therefore, this is a comprehensive kind of discussion where we see that how organizations can achieve higher level of performance. And higher level of performance is not possible when you work in silos. You need to have a very high degree of integration. And that integration is required across functional areas.


And all the names which I just took are of those different functional areas which need to integrate, so that they can contribute significantly in the corporate level strategy. And when they can contribute significantly, the organization will be able to leverage the strength provided by these functional areas. And organization can avoid the weaknesses of these functional areas. And in this way, we can achieve the operational excellence.

We can achieve business excellence through operational competitiveness. And we have in this last session, some of those examples which have done a remarkably well with the help of their operational excellence. We have specifically discussed the example of Toyota in 2 sessions. It took us to discuss 2 session to Toyota production system. And some of the people can go to that extent.

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**Some Classical Examples**

<p><u>Toyota</u></p> <p><u>Apple Int.</u></p>	<p><u>Toyota Production System</u></p> <p>① <u>Consolidation of product lines, faster rate of NPD, They moved from 20<sup>th</sup> century production efficiency mentality toward a new era of value, based on ideas, design, and content.</u></p>	<p><u>WCM</u></p> <p><u>R&amp;D</u></p> <p>1976, 1980s</p> <p><u>Low Cost</u></p>
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The whole concept of Toyota production system is nothing but world class manufacturing. So, the whole success of Toyota car company is based on their operational excellence. And we have discussed it many a times in so detail that there is no need to go again and again to point those important outcomes. The other very popular name which all of us know very well is the Apple.

Now, this Apple is one of the popular name in the field of computers, in the field of mobile phones. And this Apple company has something very specific. Whether you go into the fields of marketing management, whether you go in the field of supply chain management, whether you are now discussing the world class manufacturing; everywhere, we can learn something from Apple.

Now, Apple particularly in this discussion of world class manufacturing becomes significant because of 2, 3 reasons. When Steve Jobs joined again this Apple company and became CEO of this organization, he consolidated the product lines of Apple. Before his joining, Apple was offering somewhere around 15 different product lines. After Steve Job became CEO of this organization, they consolidated it into just 3 product lines.

So, 1 very important thing is consolidation of product line. Now, you can recall 1 of our discussion where we say that the test; whether I am following a manufacturing strategy or not; whether I am clear about my direction of movement; is when I am able to say no to some of the things. And this is the example that how Apple could say no to some of the product lines. And consolidated the similar kind of product lines into just 3 different product line.

So, this became a very good example about the focus. So, organization had a clear focus. And this clear focus is one of the important reason of revival of Apple company. Because, when a why I am saying the revival; because initially Apple was enjoying a very good market share in the personal computer industry. But after that, this is I am talking somewhere around 1976. But after that, when IBM launched their products and continuously and continuously Apple's share in the PC industry declined.

And it declined to 2% and 3% level also. And finally, Steve Job joined that organization. And after joining Steve Job to Apple, this whole revival story started. Therefore, the role of Steve Job as a leader is also very important. And that is another dimension in which Apple can be discussed. And when you consolidated your product lines into just 3, they could also achieve faster rate of new product development.

So, they had much faster rate of new product development. And as a result, we all see that, every year you have a new iPhone version. And this is part of Apple's strategy. And their heavy investment in RND and new product development is giving that dividend to this organization. So, the company has positioned itself as one of the leading innovative company. And when you have this focus clear in your mind that we want to have this innovation as our important order winner and qualifier; so, obviously you are targeting that market.

So, the ability of Apple to identify clearly that I am into that market where customers are going to love innovation as important order winner and qualifier. When Apple was initially launched in 1976 and it was into the PC industry, the important order winner for them was the low cost. They were supplying the low cost computers. And that became the sailing point initially for Apple.

But later on, they realized that they were unable to compete with those products which were having the Microsoft compatibility. And as a result of that, continuously their market share declined. But now, Apple had clear focus and clear understanding of market, that we are going to serve those customers who love innovation. And therefore, they invested heavily on this order winner and qualifier.

So, you can see that, how you have a focus, and then your action. You have focused on innovation. And therefore, you invested on research and development, so that you can have

faster new product development cycle. And this is a very good example for manufacturing strategy that how organizations can take benefit of their ability which you are developing by your investment decisions.

And as a result of that, they moved from twentieth century production efficiency mentality. Because, as I said, around this period of 1976 to 1990s, they were largely efficiency driven organization. So, their focus was more on low cost. But, when they got into this restructuring of their organization. And in this restructuring process, they realized that our aim is different and our market is different.

So, they moved from this traditional system of efficiency, economics of scale, low cost, etcetera. And they become more innovation oriented and started focusing on ideas, design, content. So, their entire focus changed from the process to product. So, initially, they were more process driven organization. Later they become more product oriented organization. And when they become more product oriented organization, they were able to satisfy their customers much better.

And since then, we have seen that Apple has become a brand of innovation. Apple has become a particular kind of status symbol that you are an; even the customers feel that if I am using Apple product, I am an innovative person. So, that type of mindset has changed. And the focus on identifying your order winners and qualifiers and accordingly taking decisions of investment; that is the key for the Apple's success.

So, this is 1 very important example that is very very popular. And we can understand this example from the manufacturing strategy's point of view also. The second important example we will like to discuss;

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③ Dell

165 countries

- ① New products are developed in US (Texas)  
 These are then customized by the regional offices to meet requirements such as local power supplies, language specific keyboards and documentation.
- ② Global and local procurement
- ③ Global manufacturing — *close to market tariff & taxes exchange rates*

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That is about the Dell company. This is also a computer based organization. And therefore it is very interesting to discuss this example with Apple's example. Now, in this case there are 2, 3 important things. There are many things which have contributed in the success of Dell. But from the operations point of view, there are 3, 4 important things. 1 important thing is the process of new product development.

So, all new product development is taking place at 1 centralized facility which is located in U.S.A., Texas. So, all major central facility or major central new product development is taking place in U.S.A. But, since the market is global and you have customers in Gulf areas, you have customer in India, you have customer in China, you have customer in Japan and you have customer obviously in U.S.A. also.

So, for localization of these products, there are regional centers. And these regional centers or regional offices; what they do? They are working on things like local power supplies. We all know that different countries have different type of specifications of power supplies. Even they have different types of sockets. And therefore, this type of simple local customization is being done by those regional centers.

Language specific keyboards; English is popular in India, but many other countries are there where English is not spoken. So, you need to develop keyboards in the local language. So, these type of work is done at the local or regional offices. So, these type; and the documentation, the manuals which are supplied with these products; so, you need to translate those manuals which are developed in English in the local language.

So, all these work is done at the regional offices. Because, this will bring 2 things, the cost of doing this customization will be less and at the same time you will be having better customer satisfaction. Because the chances of mistakes will be low when local experts are doing all these customization. So, that is 1 very interesting thing about Dell. That how part of new product development is done centrally and part of that is taken at the local levels.

Another important thing; this is 1 important thing, that is about the new product development. The second thing is global and local procurement. They have 1 central procurement facility at U.S.A. So, that central procurement facility does some kind of global procurement. But all these regional facilities are also doing the local procurement. So, there are few things for which you need high level of economics of scale.

So, these are globally procured, because of their high unit values etcetera. But, there are few things which may not be required in large volumes. Like the example of power supplies. So, those power supplies are locally procured. Similar things are there which are locally procured, the stickers and packing materials, etcetera. So, these are low value things. So, you can procure these. So, the sourcing of material is also done at 2 level in the organization.

The third important thing is about global manufacturing facility. You are doing designing, development of the product at the central facility. The procurement of raw material and other components is done at the 2 level. But the manufacturing is done globally. There are in U.S.A. itself 23 different manufacturing facilities of Dell. And then you have manufacturing facility of Dell in China, Korea, Japan.

So, there are large number of manufacturing facilities. And these are; these manufacturing facilities are developed for taking 2, 3 different types of benefits. 1 is, these are close to market. So, a particular local facility serves that local market. So, being close to market, these facilities take the benefit of tariffs, taxes, these facilities become independent of exchange rates. Otherwise, you see in the global market, exchange rate is a very crucial thing.

And fluctuations are happening very fast. So, these types of benefits, you are able to get. And because you are close to market, because you are close to market, your responsiveness also becomes high. And this is particularly important when we are discussing Dell. Because in

Dell's case, pre 2007 was a different kind of era. Pre 2007, Dell was known for 1 very typical USB that Dell was providing products as per the customer specification.

So, as a customer, I was privileged to design my unique machine. And Dell was supposed to provide me that machine. Dell was supplying their products in around 165 countries through online orders. So, you can design your machine, you can fix components as per your requirement in that machine. Dell will assemble it and deliver into these 165 countries. But obviously, it is going to take time.

So, depending upon your location, in U.S.A. you can get your product in 3 to 4 days; and if you are in India, it took around 10 to 15 days to receive your product, receive your order. But slowly and slowly Dell realized that different customers are not giving different types of orders. Most of the customers are giving similar kind of orders. So, that customization element is not prominent feature in the computer orders.

So, Dell could anticipate the new order winner. And the new order winner was your responsiveness to deliver the product. Customers were not ready to wait for their unique machine, because that factor of uniqueness was missing. Now, customers want almost similar kind of machine. You can think that, if you want to have a computer today, so the kind of specification which you will give for your computer and your friend who wants the computer, then some of other member in your neighborhood who wants the computer; almost all of you will have same kind of specification.

So, we are not able to think unique configuration for my requirement. Because we all have similar kind of requirement. So therefore, the order winner shifted from that uniqueness to delivery speed. And therefore, Dell developed a responsive supply chain by opening the retail outlets. And now you see that Dell's retail outlet are available almost in every city of our country. And this is another example that how you could anticipate.

So, anticipation was about changing order winner and qualifier. And accordingly, Dell adjusted its operational level strategy to provide computers through retail outlets. If customers would have shifted to some alternative brand; HP, IBM or some other; then it would have been very difficult for Dell to bring back to Dell's purchase. So, anticipation of

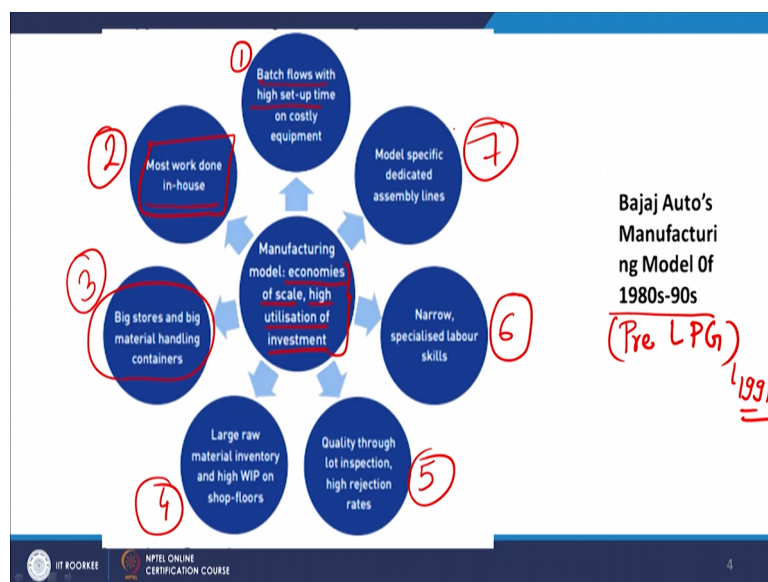
changing customer preferences and accordingly adjusting your operational level activities was again a very interesting example which Dell demonstrated.

So therefore, it is worth discussing that how you focus on your changing order winner and qualifier and your ability to understand those order winner and qualifier beforehand, so that by the time actually that change happens in the market, you are readily available with new operation strategy. Or you are readily offering new order winner and qualifier. So, Dell is perfect example for that purpose.

Then, we come to our Indian market. Now, in Indian market, we take this example with the help of a 1 known organization which is named as IBEF, Indian brand equity foundation. Now, this Indian brand equity foundation did a research with the help of CII about the manufacturing competitiveness of the Indian organizations. And in that, they studied Bajaj Auto as one of the example.

That how this Bajaj Auto which was one of the very prominent Indian manufacturer once upon a time lost its competitiveness. And to regain the competitiveness, what type of programs did they use. And we will be using the data and the figures available in that report of Indian brand equity Foundation.

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Now here, we have this model of Bajaj Auto which was available or rather which was developed to show that how they were working in that period of 1980s and 90s. Or this was the period of pre-liberalization. This is period of pre LPG. LPG means liberalization,



privatization and globalization. So, it is an acronym to depict this major change which happened in Indian economy around 1991.

So, before that, how Bajaj Auto was operating? That period was characterized by quotas; that period was characterized by licenses. You have limited capacity and you cannot produce as per the market requirement. Whatever government has permitted to produce, you can produce only that many scooters per day. So, that was the period in which we were discussing the Bajaj Auto's manufacturing model.

Now, in this particular case, the manufacturing focus was on 2, 3 things. 1 was economies of scale. So, as again and again we have discussed, the traditional manufacturing approach was focused on efficiency, capacity utilization. And that is, economics of scale and high utilization of investment. So, the focus was on these 2 things, that how to lower the cost of your production.

So, whether you call it economies of scale, whether you call it high utilization of your investment, the ultimate purpose is to reduce the cost of your production. So, this was the major focus, the center point of manufacturing in pre-liberalization period. And for that purpose, what Bajaj was doing? Batch flows with high set up time on costly equipment. This was one of the thing.

Because you have a batch of some kind of Priya scooter. So, you will make let us say 1,000 Priya scooters in 1 single go. Then you have a batch of Super scooter. Then you have a batch of Chetak scooters. So, these were the models which Bajaj used to make in that period. So, the production was taking place on this batch flow system. Then, another important thing was, most of the activities were done in-house.

There was lack of reliance on vendors. So, almost everything was done in-house. Very little focus was on vendors. Then, another thing was big stores and big material handling containers. Because of batch production, your factories were looking like warehouses. And warehouses were also of big size. So, that is again economies of scale idea. That make huge warehouses, big factories. So, everything was characterized with big word.

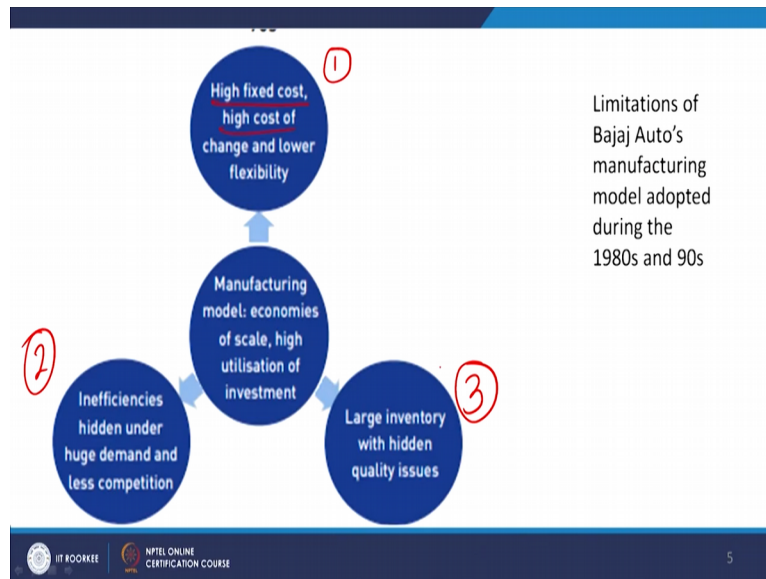
Then, another important thing was large raw material inventory and large work-in-process inventory. So, as we say that, even in Toyota company also, this was the problem before implementation of Toyota production system, that Toyota car company used to look like a warehouse. So, same thing was in Bajaj Auto also. And even today also, when you go to some of the FMCG companies in India, you will see that the companies look like a warehouse.

Another important characteristic was, quality through lot inspection. And there was nothing like Six Sigma or SQC, a very high rejection rates were there. Simply, inspection processes used to be there. And because the focus was on high utilization, so the processes were weak. The responsibility of quality was shifted from production people to inspection people. So, that was another important thing.

There was no concept of employee involvement. There was no concept of job enrichment, job rotation. So, people were working more with a very narrow specialized activities. And another important thing was; this is slightly contradictory in nature. That on 1 side, we are talking of high utilization of investment. But on the other side, because of lack of flexibility in these organizations, you had model specific, very dedicated assembly lines.

So, if 1 assembly line is producing 1 type of product, it has no flexibility to shift or to make other type of products. So, that was another important characteristic of this pre liberalization para of manufacturing. We are discussing this in context of Bajaj Auto. But you can understand this for many other organization, that almost similar kind of situations were there in almost all Indian manufacturing organizations pre LPG. Now, when we have discussed those characteristics of manufacturing of Bajaj Auto, so, what type of limitations which emerged out of that discussion.

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So, because the manufacturing model is focused on economics of scale and high utilization of investment; so, 3 important limitations you can find. 1 is high fixed cost and high cost of change and lower flexibility. Because, you had model specific assembly lines. And for developing those model specific assembly lines, your capital investment was excessively high. So, there was very high investment in the development of the assets.

Since the dedicated assembly lines were there, so, you had less flexibility. And if you want to change this assembly line for a different kind of product, the cost and time involved in changeover was also excessively high. The second limitation was inefficiencies hidden under huge demand and less competition. Because, it was a system which was characterized by quotas, licences, etcetera.

So, the competition was less. Not many players were there in the market. And therefore, even you did not recognize your inefficiencies. Because of whatever you were producing, demand was excessively high. And we all know that, in those time, it took around 3 years, 4 years, 5 years to get your scooter, to get a product which you have booked. Nowadays, even it is beyond our imagination that, you need to book a scooter.

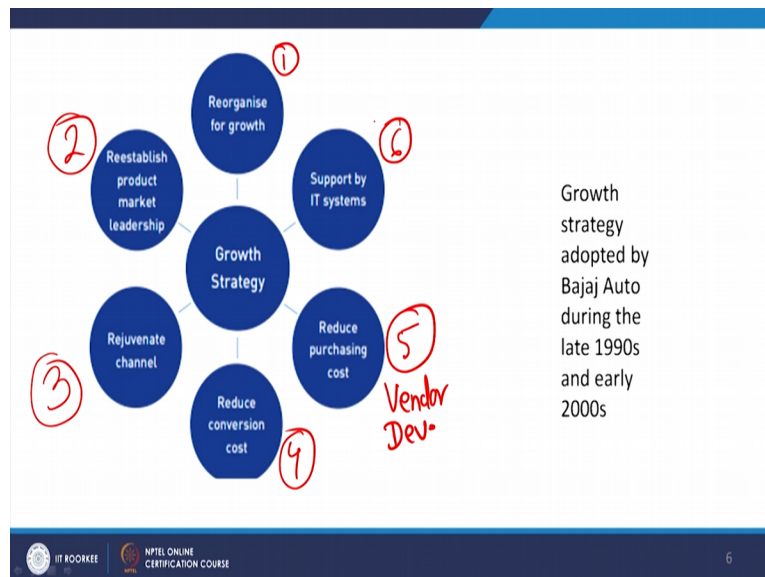
You have money in your pocket; or even if you do not have money, bank is there which can provide you loan. You go to a scooter showroom. And immediately you can walk with that scooter in your hand. But in earlier years, this was not the system. So, organizations were not very much concerned about the inefficiencies. So, these were not the point of discussion at that time.

And the third limitation was large inventory with a hidden quality issues. Because quality was not built in the processes. Quality was the responsibility of the inspectors. And therefore, there were always quality issues because of lack of competition on that front. And at the same time, large inventories were there. And large; on 1 side, we wanted to have economics of scale. But on the other side, the models which we were using, these models were actually increasing the cost, either because of more inventory or because of high rejection rates.

So, these were the some problems which were there in the Bajaj Auto, but you can say these was prevalent in almost all manufacturing organizations during that time. Then, when liberalization started and multinational corporations came to India and our Indian organizations faced very stiff competition. So, as a result of that, even some of the companies like Bajaj Auto had to change their manufacturing philosophy.

And Bajaj Auto adopted the lean system of manufacturing, which is one of the core element of world class manufacturing. And in this lean system which they adopted in early 1990s and continued up to the twenty first century.

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And now in this particular system, they actually reorganize the organization for growth. So, the reorganization happened around lean thinking. That how you can eliminate the waste in your organization. So, that became a very important thing in this reorganization activity. The second important thing; because before that everything was process driven. The role of customer was not there in the organization.

But in this lean thinking, we focused more on what value customer is looking for. So, our focus changed like in case of Apple, the focus also changed in case of Bajaj Auto, that shifted from process to product. So, we reestablished product market leadership kind of approach. Then, rejuvenation of channels. Now, rejuvenation of channels means developing and respecting the partnership in your activities.

So, 1 side, you have distributors. And on the other side, Bajaj started developing vendors. Before that, in our last slide, we discussed that Bajaj was doing most of the activities in-house. But now, Bajaj realized that it is not the time to do everything in-house. You should know that where to do make and where to buy. So, some of the things you can buy also. So, that is the point of rejuvenation of channels.

Then, another important thing which was done is the reduce conversion cost. Now, reduction in conversion cost could be achieved by having more flexible manufacturing setups. If you have heavy investment in your manufacturing setup, conversion is from 1 type of manufacturing product to another type, will be very costly. Which was one of the limitation of the earlier manufacturing model.

So, now, they went for more flexibility, which can help us in reducing the cost of changeovers. Then, another important thing is reduction in purchasing cost. Now here, Bajaj did lot of efforts, particularly in reducing the purchasing cost. They went aggressively in vendor development. So, vendor development became a very important activity in Bajaj Auto. And as a result of that, they could significantly reduce their purchasing cost.

They started challenging their vendors, that how can you reduce the cost of different components. And finally, Bajaj got tremendous success in reducing the purchase cost of various components. And at the same time, Bajaj also went for lot of automation. Integration of IT infrastructure, using IT infrastructure for decision making, so that the breadth and depth of IT can be used for its leveraging, for taking the strategic decisions.

So, by doing so many things simultaneously, they became a kind of holistic organization. They started working on every front. And it is vendor development, it is IT application, it is how you are using your systems with more flexibility, how you are able to offer more market-

oriented product because of understanding the customers in a better way. And all these things helped Bajaj to regain some of its lost glory.

And Bajaj became within India, not so. But Bajaj became one of the largest 2 wheeler exporter from India again. And this is a story that how 1 organization can take advantage of its operational excellence and may become more competitive, even after losing its glory. So, whether we discuss the international example of Apple or we discuss the local example of Bajaj; both these are; or examples say that they were enjoying 1 type of supremacy in the market.

Then got a shock. But again revived to the lost glory, so that they can take the advantage of their operational excellence. So, with this, we come to end of this course, where we discussed that, operational excellence can provide important advantage to the organization. And we need to see that what are those ways and means through which you can use operational activities proactively, so that you become a more market driven organization.

And when you become more market driven organization and you are proactive in understanding the market requirements, you can adjust your operational activities to provide you that kind of competitiveness. So, with this, we come to end of this course. We hope that you enjoyed learning through this course, all through 40 sessions. Have a nice learning experience. Thank you very much.