

**Manufacturing Strategy**  
**Professor. Rajat Agrawal**  
**Department of Management Studies**  
**Indian Institute of Technology, Roorkee**

**Module No. #05**

**Lecture No. #23**

**Manufacturing Strategy Taxonomy: Some evidences from China**

Welcome, friends. Now, we are entering into the, twenty third session, of this course on Manufacturing Strategy. In last few sessions, we discussed, two important things. One, we discuss the process of developing, the Manufacturing Strategy. And, we analyse the entire process, which starts from, understanding the market, and then, what will be the output of your Manufacturing Strategy.

During the discussion, we also discussed, one very important contribution, came from Roth and Miller, which was a study, done in 1989. And, it was published in, 1994. The study was mainly, comprised of, few North American organisations, particularly manufacturing organisations. And, that taxonomy, which was given by Roth and Miller, became the most popular taxonomy, of Manufacturing Strategy. Or, you can say, the meaning of taxonomy is, that generic strategies, for Manufacturing Strategy.

That is the meaning of taxonomy. And, Roth and Miller, can be said to be the first contributor, developing that type of taxonomy. And, in this session, we will review, the contribution of Roth and Miller, and subsequent contribution, by other researchers like, Dixon. But, the most important part of today's session, is to discuss, evidences of Manufacturing Strategy, from China.

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Because, we all know, that in present circumstances, China has become, the manufacturing superpower of the world. But, there is, very little literature, there is almost, no literature available, for Chinese manufacturing. Before China, Japan was considered, to be one of the superpower, related to manufacturing. And, we have, sufficient amount of literature. We know, what are the important drivers, of manufacturing in Japan.

But, due to various reasons, there is not enough literature, rather there is no literature available, for the Chinese manufacturing. In this particular session, we are trying to discuss, something about, Chinese manufacturing system. Because, as we all know, whether it is us Europe, or any other country, manufacturing is slowly and slowly shifting, to China. So, what is the secret of success of Chinese manufacturing.

Most of the time, that secret is centred around, cost. That, we say that, Chinese manufacturing provide, low cost advantage. So therefore, to tap that low cost advantage, all global manufacturers, are making their facilities in China. But, it is not only the low-cost, but there are many other capabilities, which different Chinese manufacturers are developing, over a period of time.

And, as a result of that, China is able to maintain, a global superpower, in case of manufacturing, for last more than 15 years. So, in this particular session, we will like to see, that what type of taxonomy, what type of Manufacturing Strategy taxonomy, is suitable for China. Whether, it is similar to Roth and Miller, or it is something different, that is the major content, of the session.

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Roth and Miller

- Caretaker
- Marketeer
- Innovator

Handwritten notes in red: "188 manufacturing N.A. Org." with an arrow pointing to the list.

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Now, quickly, let us review, what Roth and Miller has said, about manufacturing taxonomy. In one of our earlier session also, we have discussed, about the contribution of Roth and Miller. Roth and Miller, did their study, on 188 North American organisations. So, all these 188 manufacturing companies, were in the America. And, they took their sample. They developed a questionnaire. And, based on that, they classified the manufacturing organisations, in three categories, Caretakers, Marketeers, and Innovators.

And, this became a very popular, classification of manufacturing organisations. But, in their study, the paper which was published in, management science, in 1994, in that Roth and Miller emphasised, that since the data was collected, only from North American organisations, so it requires, a global validity. Whether similar type of taxonomy is applicable, in other part of the globe also. And therefore, there is a requirement of, global data collection.

Now, if we quickly see, what was the meaning of Caretaker, Marketeer, and Innovator, you can understand, that Caretakers were those, who were reluctant, in developing any type of competing abilities, any type of new capabilities. So, they were satisfied, with their present situation. So, they were the Caretakers. Marketeers were those organisations, those who were changing their product profile, those who were changing their quality, those they were able to fulfil the requirement of the customers.

So, as per the need of the markets, these organisations were able to modify, these organisations were able to react, with respect to their offerings. Innovative organisations were those organisations, who were anticipating, that how the market will change. And, before market could do those kind of things, before market could realise those type of things, these organisations were able, to offer those qualifiers and winners, in their products.

So, they were ahead of market. You can say, Innovators were ahead of market. And, they were driving the market. What changes were happening in the market, and according to those changes, these organisations were adjusting, their offerings. Caretakers, were very reluctant to develop, any kind of new capabilities. And, they were satisfied, with their present scenario.

So, these were the three types of organisations, which were defined by, Roth and Miller. But, as I said, the limitation they mentioned, and they also emphasised, that there is a need of, validation of this study, with pancontinental data. And, that happened, after few years, may be around 8 years of time.

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The slide displays the text 'Frohlich and Dixon (2001)' with handwritten red annotations. To the right, '(N.A. S.A. Europe)' is written in a bracketed format. Below this, a list of 'Idlers, Servers = Mass Customizers' is shown, with 'flexi' written in red next to 'Mass Customizers'. The slide footer includes the IIT Roorkee logo, 'NPTEL ONLINE CERTIFICATION COURSE', and the number '3'.

In 2001, Dixon and Frohlich, they came. This study was published, in year 2001, where, they collected data, not only from North America, but they collected data from, various South American countries also. And, they collected data from, some of the European countries also. So, they collected data, from North America, South America, and Europe. And, when they collected this data, they found that, the classification of Roth and Miller, is not globally acceptable.

The kind of organisations, Caretakers, Marketeers, and Innovators, which Roth and Miller suggested, may not be applicable, to rest of the part. And, in their paper, which is available in Journal of Operations Management, Frohlich and Dixon mentioned, that some of these taxonomies were applicable, in some specific countries. But, there is no universal agreement, about the taxonomies of Roth and Miller

So, two points came into prominence, as a result of this study, as a conclusion of this study. That, one, with the passage of time, Manufacturing Strategy taxonomies may change. As we discuss, in case of Order Winners and Qualifiers, the same thing applies, about the generic manufacturing strategies, that these may change, with passage of time. And, these may also change, as you move from, one country to another country, or you can say, you move from one market to another market.

So, there are two levels of changes. And, therefore, we continuously need to evolve, we continuously need to study, the markets, so that, what type of current requirements are there. And, according to those requirements, we can suggest, what generic strategies are possible, in the current scenario. Since, we have discussed this point, many a times, that not much research is happening, or not much research has happened, in the area of operations strategy.

Therefore, we get, very few literature, and at an enough interval, about the taxonomies of Manufacturing Strategy. So, Frohlich and Dixon, they suggested, three different types of organisations. These are, Idlers, Servers, and Mass Customizers. So now, Idlers are, you can say, somehow similar, to the idea of those organisations, which are Caretaker, according to Roth and Miller. So, to some extent, Idlers are similar to Caretakers. Because, they were also not very much willing, to do anything new.

So, it may be the simply, the differentiation of name, between Miller and Roth, and Dixon and Frohlich. But, Idlers and Caretakers, are more or less, similar, when they do not want to acquire, any new capabilities. Now, Servers, are those types of organisations, where the focus is not only on developing products, as per the customer requirements, but you also take into account, how fast you are able to deliver, and not only deliver, you also take into account, after sales services.

And, the concept of customer relationship management, also became a very important key idea, about the service organisations. That, these organisations, try to maintain, a complete loop, complete relationship, right from you start purchasing the product, to finally you consume the product in totality. So, these are the service organisations, which develop a long-term relationship, with their customers.

And then, Mass Customizers. Now, Mass Customizers are those organisations, where the focus is on, how to fulfil the unique requirements of the customer. Now, here, very interestingly, the focus was less on quality, rather focus was more on, design flexibility, volume flexibility, delivery flexibility. So, the focus became more, on the flexibility related dimensions. And, that is a very unique finding, with respect to manufacturing taxonomy, that now, the focus is on flexibility.

And, for the first time, people realised, that flexibility can be a very important order winning criteria, that how to develop, design, volume, delivery flexibility, so that, as per the requirement of the customer, you can deliver, either in quick time, or in long time, whether you can deliver, in smaller volumes, or large volumes, whether you can deliver, different types of products. So, all these different types of flexibility, were incorporated, in Mass Customizers.

So, you want to serve, the masses, you want to serve, the large number of customers. And, at the same time, you want to attain, this flexibility. So, this was not at all, this mass customizer kind of concept was not at all available, in the Roth and Miller taxonomy. But now, this became a very important type of, characteristic of manufacturing organisations, that organisations were trying, to achieve the customer satisfaction, by Mass Customizers.

And, they became, more and more flexible. And particularly, this was possible, because of involvement of automation, into the manufacturing arena. More automation, helped organisations, to achieve the idea of mass customizer. So, this is the second important taxonomy, which was developed. And, it was not actually, the development of this new taxonomy. The idea of Frohlich and Dixon, was to just empirically test, the Roth and Miller taxonomy, with the global data.

So, that was their idea. But, during that study itself, when they realise that, the universal acceptability, or universal validation, of Roth and Miller taxonomy, is not possible. So, they came with this, different taxonomy, Idlers, Servers, and Mass Customizers. Now, having studied, these two important taxonomies, now we go to Chinese organisations, where a paper is available, about the manufacturing taxonomy, in the Chinese organisations.

And, there are some authors, Zhao, Sum, Qi, Zhang, and Lee. These five authors, gave four type of Generic Manufacturing Strategy, which they developed, after studying, a large number of manufacturing organisation.

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Zhao, Sum, Qi, Zhang, Lee  
Quality Customizers  
Low Emphasizers  
Mass Servers  
Specialized Contractors

1352  
Low Cost  
Low Labour Cost

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They studied, some 1352 manufacturing organisations, in different provinces of China. And, after doing that study, they came, with this four types of manufacturing taxonomy. And, these four are, Quality Customizers, Low Emphasizers, Mass Servers, and Specialized Contractors. So, they said, that primarily, Chinese organisations were known, for the low-cost.

So, the original idea of Chinese manufacturing capability was, to produce products, at low cost. And, low cost products were possible, because most of the Chinese organisations, were doing labour-intensive manufacturing activity. And, labour was available to China, in abundance. So, therefore able to, reduce the cost of product, by reducing their labour cost. And, low cost, because of low labour cost, became a success mantra, for Chinese organisations.

But, later on, we have realised, that it is not only in those low-cost products, but the Chinese products are available, across the horizon, across the spectrum. And, you find Chinese products, in very sophisticated engineering arena also. And therefore, it is not simply, this low-cost, but there are some other factors also, which are contributing, in the success of Chinese manufacturing.

And therefore, it is interesting, or it is rather important, to understand, what are the strategies, what is the phenomena, which is driving the success of Chinese manufacturing. And therefore, this part of the session, is very, very important. Now, Quality Customizers. According to the authors, Quality Customizers are those types of organisations, which are developing their capabilities, to cater, to a wide range of customer requirements.

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The slide features the title "Quality customizers" at the top, with "Quality" and "customizers" circled in red. Below the title are two bullet points. The first bullet point is "Aim to develop capabilities that cater to a wide range of customer requirements, particularly in the area of conformance quality." The words "wide range of customer requirements" and "conformance quality" are circled in red. The second bullet point is "The abilities to change and modify products or designs and to accommodate these changes in manufacturing were important manufacturing objectives." The letters "FM" are handwritten in red below this point. At the bottom left of the slide are logos for IIT Kharkee and NPTEL Online Certification Course. A small number "5" is visible in the bottom right corner of the slide area.

- Aim to develop capabilities that cater to a wide range of customer requirements, particularly in the area of conformance quality.
- The abilities to change and modify products or designs and to accommodate these changes in manufacturing were important manufacturing objectives.

And, since there are two words, one is quality, and another is customizers. Now, when I talk of customizers, it means, ability to provide products, for the individual requirement. So, that is the first part, that you need to develop capability, to fulfil the wide range of customer requirements. That is one part. And, second is, these wide range of product, should also be confirming, to the quality. So, there are two types of things, are available with the quality customizers, that these companies, these organisations offer, wide range of products.

And, at the same time, they are able to maintain, they are able to adhere, to the specifications, laid down by their, design departments. So, Quality Customizers are, and it is very much evident also, with our practical experience, that we see that, large number of Chinese



products are available. So, there is a wide variety of products. And, most of these products, nowadays, are achieving, very high level of quality specifications.

So, these are, Quality Customizers organisations. Now, the Quality Customizer organisations, they are having, the abilities to change, and modify products, or design, to accommodate the changes, in manufacturing. And, these are the important manufacturing capability, that how you incorporate manufacturing setup, how you choose a particular type of process, so that, when you are manufacturing, wide variety of products, your manufacturing processes can support that.

So, your whole idea, of developing the capability, is centred around this particular aspect, that yes, we will be developing capabilities. And, most of these organisations, therefore lay emphasis, on things like, FMS. That, Flexible Manufacturing System, how to develop that kind of capability, which can help us in achieving, high degree of customisation. And, at the same time, with that customisation, we are also achieving the, quality. So, that is, the first type of organisations, Chinese organisations.

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## Low Emphasizers

Relatively low emphasis on the competitive capabilities compared to the other clusters.

The second type of Chinese organisations are, Low Emphasizers. Now, Low Emphasizers are those organisations, which are similar to, you can say, to some extent, like Caretakers, and Idlers. So, Idlers and Caretakers, where they are not very willing to develop, new capabilities. So, here also, these Low Emphasizers have, low emphasis, on the competitive capabilities, compared to, other type of clusters, other type of taxonomies.

Now, while some organisation, when the market is moving, so competitive, why you can think, that organisations can exist, organisations can survive, without any emphasis on developing new capabilities. This is a very important question. And, I will like to give, some input from my side. But, in our forums, I will like to get more inputs, from my participants, that why, or how, any organisation can survive, without acquiring new capabilities.

Now, when I say that, organisations are doing, or there is no emphasis, on acquiring new capabilities, the meaning can be, one, that you are living, you are operating, in an environment, where you do not have any competition. So, when you do not have any competition, you become reluctant, to acquire new capabilities. So, that is one possibility, that because, there is no competition. And, it is quite possible that, competition is not there, either because, you are operating, in a protected environment.

So, you have a protected environment. And therefore, you do not want to acquire, any new capability. So, if you think of India, and pre-liberalisation, pre-1991 scenario, if you see, many of the Indian organisations, were Low Emphasizers. The reason was very simple. Because, at that time, they were enjoying, lot of protection from the state. And, as a result of

those protections, they never thought of getting, or improving their capabilities, strengthening their capabilities.

And, this was one very important reason, which is there, in the organisations that, if you have a special protection, because of which, you feel that, there is no need to develop, any additional capability, you remain Low Emphasizers, you remain Caretaker, you remain Idlers, kind of thing. But, as we all understand, that markets are moving, into the direction of competition. Markets are becoming, open, and liberal, day by day.

So, it will be almost impossible for new organisations, or even the existing organisations, to survive, without acquiring additional capabilities. So, I do not think, that Low Emphasizers will have, long time. They will need to do, some kind of strategy adoption, either I, III, or IV. But, there are significant number of Chinese organisations, which are in category of, Low Emphasizers.

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The slide is titled "Mass Servers" and features a red icon of a server rack. The main text reads: "To service a 'mass' of customers through a variety of manufacturing capabilities and after-sales services." Below this, the words "Quality, broad product line, cost and speed" are underlined. Handwritten in red ink, "A" has an arrow pointing to "Quality" and "B" has an arrow pointing to "Cost". The slide footer includes the IIT Roorkee logo and the text "NPTEL ONLINE CERTIFICATION COURSE" with the number "7" in the bottom right corner.

Then, the third type of organisations are, Mass Servers. Now, Mass Servers are those organisations, those who are serving the masses. So, they are servicing the mass customers, through a variety of manufacturing capabilities. Now, if you recall, the first type of Manufacturing Strategy, is the Quality Customizers. So, they were providing, wide variety of products. And, all those wide variety of products, were having the quality conformance. But, here, in case of Mass Servers, these are serving the masses.

And, in the servicing to the masses, they are providing, a good variety of capabilities. And, these variety of capabilities include, quality, a very wide product line, the low-cost, faster deliveries. All these capabilities, are included, in servicing the masses. So therefore, Mass Servers are there, so depending upon, what type of capability you require, you means, as a customer you require, that type of capability is used, to serve that particular customer.

So, it is a very holistic kind of Manufacturing Strategy, where you are developing, lot of manufacturing capabilities. And, not only manufacturing capabilities, but you are also developing, after sales services. In India also, we understand, that we purchase large number of products, where after sales services, are easily available. If after sales services are available, in my hometown, I will like to purchase that product.

But, if that service is not available in my hometown, I will be slightly reluctant, even if the quality is good, even if the price is low. But, after sales service has become, a very important criterion, nowadays. And, this Mass Servers, according to this taxonomy, the third type of generic strategy, from Chinese organisations, they have emphasised, with various manufacturing capabilities, on this after sales services also.

And, they are serving, the masses. So, to a particular Customer A, may be the quality related dimension is used. And, for the Customer B, cost related dimension is used. So, your organisation, is able to provide, for different customers, different type of manufacturing capability. So, that is Mass Servers.

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**IV Specialized Contractors**

- Speed, cost, conformance quality and performance quality were the most strongly emphasized capabilities in this cluster
- Flexibility attributes (i.e., changes in volume and design) were the least emphasized capabilities .
- Thus, this cluster appeared to avoid making many different products or introducing new products, and chose instead to concentrate on offering a narrow range of products quickly at a low cost.
- This cluster may be experiencing the trade-off between speedy, low-cost production and flexible, high-cost production, and had decided to compete using the former orientation.

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Then, we come to fourth type of organisations, these are Specialized Contractors. Now, these Specialized Contractors are those organisations, which are not serving, wide variety of products. They may be serving, only some limited amount of products, limited variety of products. So, their product line, is not a long product line. Now, they are following, speed, cost, quality conformance, performance conformance. These are, the important capabilities, these organisations develop.

And, they also have, some kind of specific ability, to serve some specific customer. So like, if I am only specialized, in developing the overhead tanks. So, I will only be developing, the overhead tanks. I will not be developing, other kind of buildings. If I am a specialized, in developing highways. So, I will only make, highways. So, I will have, limited flexibilities.

So, like flexibility attributes, which are, change in volume, change in design, etcetera, I give less importance, to these types of attributes, these types of winners and qualifying characteristics. So, here, in this kind of cluster, in this type of organisations, which are Specialized Contractors, our focus is more on, some limited customers. I am not going to serve, the masses. I am going to serve, some limited customers.

And, I am going to fulfil their requirements, on the basis of speed, on the basis of their quality requirements, on the basis of cost also. But, I will not be going for, wide variety of products. I will only be focusing, on limited number of products, which are required by, that limited number of customers. So, that is the Specialized Contractors. So, there are some

specific companies like, you talk of a, company like, Amul, so they have some specific requirement of cold chain.

So, the servers of cold chain to the Amul, they are Specialized Contractors, which are fulfilling the requirement of cold chain, for Amul. So, they are not the generic kind of logistics provider, they are the Specialized Contractors. So, similar contractors are available in, other fields also. So, they are against, the idea of masses. So, we saw that, according to Chinese system, there are few organisations, which are serving the masses, which are serving the limited number of customers.

And, there are organisations, which are, not at all willing, to acquire any kind of capability. So, these are Low Emphasizers. So, these are the four type of capabilities, which are proposed, by these authors. And, based on these things, we can also think of developing, Manufacturing Strategy taxonomies, for other part of the world also.

And, particularly, we can suggest, a Manufacturing Strategy taxonomy, for Indian manufacturing organisations also, based on the inputs, given from Roth and Miller, then Dixon, and then, taking the inputs of Chinese organisations, it is good time, that we come up, with a taxonomy for Indian manufacturing organisations also. So, with this, we come to end of the session. Thank you, very much.