

Production and Operation Management
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Lecture 02
Global Environment

Welcome friends. In our first session of this course on Production and Operations management, we discussed different sources of wealth creation. And we also gave a very fundamental definition of production activities that these are value addition activities. We also tried to understand, what is value, and what is non-value because if we can understand value and non-value.

The entire operation management becomes a very very competitive activity because we want to manage various activities, but if somehow unfortunately, you start managing non-value adding activities, so your entire resource will be wasted. So, therefore the very first thing is to understand value adding activities and non-value adding activities.

Now, after that first session, when we discussed value and non-value and we also discussed that, operations management is a functional activity and there are different types of functional activities in the organization like marketing, human resource, finance, all these are functional areas. So, you need not to have just functional expertise, but you also need to have synergy between various functional activities.

So, that type of chemistry is required that your operation people are understanding the requirement of marketing people and finance is able to understand the requirement, marketing and operations both. And when this type of understanding is there in the organization, then organization reaches new heights of success.

Now, before we go further in our discussion, it is also very much required to understand the current global environment under which our companies are operating at the moment because the business environment is a very dynamic phenomena, the conditions keep changing. And it is the beauty of management that you need to understand, not only understand rather you have to be proactive to understand that what type of changes may come tomorrow.

And accordingly, you have to adjust, you have to create those capabilities in your organization that you can meet those challenges. If those organizations which are able to understand these indicators, these organizations are successful, many organizations they start reacting to those indicators.

Once those challenges are there, then they try to adjust according to those situations. So, they are always behind in that race, and there are some organizations which create those changes and those organisation which create those changes are the world class organizations. So, you have different types of organizations in the same industry, some are world class organizations, some are not world class, but very leading organizations, and some are reactive organizations and some organizations are just thinking to survive.

So, it is important that we need to become a proactive organization, we need to become a top class, world class organization and for that purpose it is important to think that what type of global changes we continuously need to watch. And if we can have our eyes and ears on those global changes, probably we can also manage our operation function efficiently. So, now when we are talking of this global environment, there are some very important events which are happening.

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Now, one event which is happening that is Deflation in factor costs, the factor cost of the various manufacturing activities. You require different types of raw material with different types of inputs, which are required in your manufacturing activities. So, there is some kind of deflation which is happening, deflation means the prices of your input material is reducing, so reduction in input material is happening.

Normally, it is like that, you see that all the time we talk of inflation, that prices are increasing, but if you see and in our coming slides, we will see with the help of some graphs, some data that how input materials are having lower cost period the period.

Then China was a major threat. It is still a major threat in the manufacturing because of its ability to produce products at a very low cost. You go anywhere in the world, everywhere you find Chinese products. So, China is a major challenge if you think of improving your manufacturing activities, because of low cost because of low cost advantage which China is able to maintain over a period of time.

No other country is able to compete with Chinese phenomena. But there is a silver lining, that silver lining that now some factor of cost in China is also started increasing and as a result of that, it is quite possible that that Chinese magic may decline over a period of time. So, that is another major global shift which is happening.

And for us in India, it is important to capture this phenomena. So, far it is not happening, but if you just see the present day scenario that US has sanctioned lot of activities in China and those US companies, which are having their manufacturing activities in China, they will move out of China now.

Now, can those companies come to India? That is a million dollar question. So, far that indications are not there, but we certainly need to try very hard that all that activities should come to India, because of better enabling environment, because of better law and order, because of more productive manpower, so and now our infrastructure is also improving.

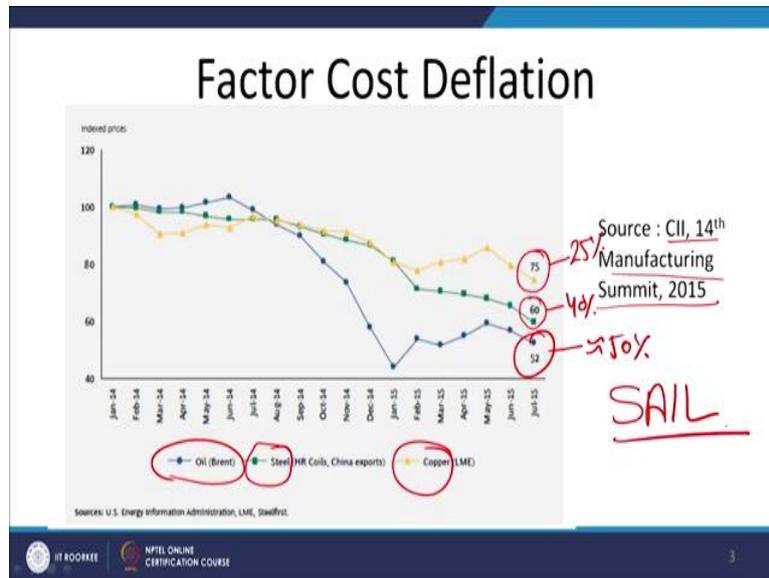
So, we need to provide a very good enabling environment and a sound logic and as a result of that, the activities which may shift from China should come to India. So, this is another very interesting and a very golden opportunity for other neighbouring countries that there may be some decline in Chinese magic.

And third is, new manufacturing locations are emerging. There are various countries, smaller countries, which are now understanding the importance of manufacturing based growth. In 1970s 1980s, everywhere it was service oriented growth, but people realize that it is manufacturing, which can give you sustainable growth, sustainable development.

And as a result, now various smaller countries and for that, I will like to take the name of African countries. African countries are very aggressively taking this opportunity of development through manufacturing. So, that is another important shift which is happening that new manufacturing locations are emerging. So, we have decline in factor cost, there is a decline in Chinese magic also and some new manufacturing locations are also coming up. So,

these are three important global shifts, which are going to take place or which are currently happening.

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Now, the first thing I was talking about that how the factor cost is declining, how the factor cost is declining and this is taken from CII that is the Confederation of Indian Industry. So, from their 14 th manufacturing summit, which took place in 2015. And based on that data, you see that there are three important things we are talking.

One is oil, the second is steel, that is the HR Hot Rolled coils and third is copper. And you see, in all these three, if we take 100 as the index prize in the month of January 2014, so you see that for all these three commodities which are very important inputs for manufacturing activities.

And the source for this is US Energy Information Administration. And you see that for all these three oil prices are going so down that within January 14 to July 15 the oil price has thrust from the point of 100 to 52. So, you can see that there is a drop of around 50 percent price of the oil.

In case of steel, from 100 it became 60, the 40 percent drop in the price of steel, the copper from 100 it became 75, 25 percent drop. So, 25 percent drop, here it is 40 percent drop, here it is around 50 percent drop. So, the prices of these three important commodities, which in various manufacturing activities are used as input, have decreased from 25 percent to 50 percent. So, this is giving a cost advantage to the manufacturer because prices are decreasing.

Now, you can have this advantage of cost, you can pass this advantage to your customer, so that is a very interesting thing which is happening so the factor cost is declining.

On the other side, there is a flip side of this declining factor cost was also because of this, your revenue will also decrease, because of this your revenue will also decrease and therefore, may for many of us because this getting steel, the HR coil that is also a manufacturing activity HR coil getting HR coil is also a manufacturing activity.

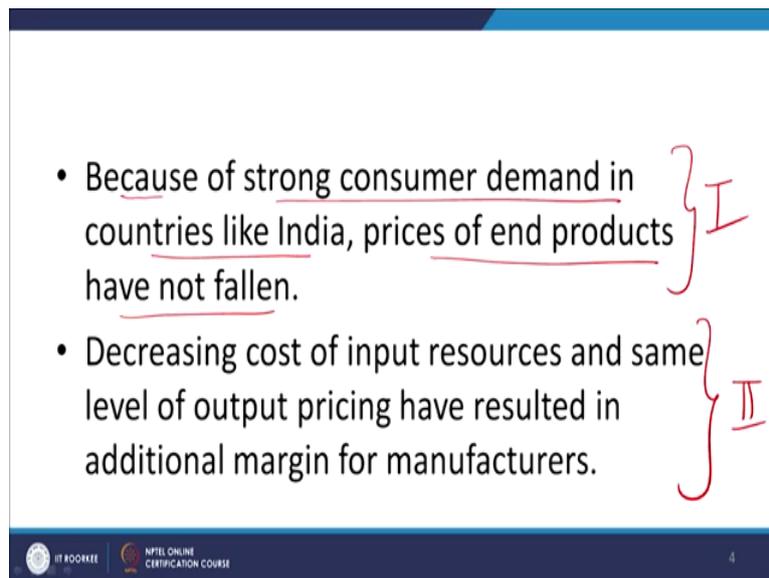
Now, when the prices of HR coil is decreasing, so HR coil is also an output for some company. So, when the prices are decreasing, so that company which is producing the HR coil for them, the profits are also decreasing because they are not able to sell the HR coil on the higher margins because of decreased prices.

So, one side of the story is that, that for many manufacturing activities, the input cost is decreasing. But for many manufacturing activities, they are not able to sell their products on higher prices on premium prices and that is a challenge that is a challenge because if I am a steel producer, if I am a steel producer.

For example, I am a company let us say SAIL, I am Steel Authority of India Limited. Now, earlier for 1 ton of steel for 1 ton of my HR coil, I was getting 100 rupees and today for same HR coil, I am getting 60 rupees. So, I am taking all pains of value addition, but now and I am paying the salary, electricity bills, all cost of intermediate processing, etc. But earlier for one time my profit was some X rupees, now my profit has reduced by X minus 40 rupees, maybe I am not able to recover my input cost.

So, I may lose interest, I may lose interest in the business of steel. So, that is a type of challenge, which is happening. So, decrease of input costs may favour some, but may not favour many other industries, so it has both type of explanations.

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- Because of strong consumer demand in countries like India, prices of end products have not fallen. } I
- Decreasing cost of input resources and same level of output pricing have resulted in additional margin for manufacturers. } II

Now, if you go with some more details about this decreasing cost, because of strong consumer demand in countries like India, prices of end products have not fallen. So, those products which use the input in the form of, for an example, the HR coil may be used for some let us say preparation of cycle rim because in cycle rim, we use CR coils.

And HR coil is converted into CR coils and that CR coils will be used for making a cycle rim. Now, the price of the cycle has not reduced. So, the margin of that cycle producer, margin of that CR coil producer has increased and that may give competitiveness that may give competitiveness to these CR coil producer, the cycle producer.

So, that is you can say one important observation, decreasing cost of input resources and same level of output pricing have resulted in additional margin for manufacturers. So, this is the observation that input cost has reduced and the output margins have increased. So, this is the additional you can say benefit to the manufacturing. And here if I take a slightly bigger view, it means more people may be interested in manufacturing activities at the secondary processing level, because the primary that HR coil, the copper issues are at the primary level.

Now, using that input for making the final production, which persons like me and you are going to use, so for that the input cost has reduced and for those products, prices have not fallen, and as a result it is quite possible that more companies may start making cycles, more companies may start making these kind of computer systems because for them, these are giving the higher profits, higher margins so this is one particular explanation.

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2 Chinese Magic

- In 1990s China contributed around 3% of global manufacturing output.

Factor cost advantage and Chinese Government efforts for orchestrate infrastructure and inputs for large scale production

Reasons

- Presently China contributes more than quarter of global manufacturing output. 25%

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The second important phenomena of the global shift we discussed with respect to Chinese magic. Chinese magic we know that, in 1990s, China contributed around 3 percent of global manufacturing output. And as a factor cost advantage, the input cost of various manufacturing activities and the Chinese government efforts for development of the infrastructure.

The pace at which infrastructure was developed in China in last 10 to 20 years is amazing. Those who visited China, they must have experienced that what amazing rate of infrastructure development they have, so these things are the reasons. And as a result, what is happening now, China contributes more than quarter of global manufacturing output.

So, in just around 25 years of time, from 1990s to 2018, in that particular period, what has happened that from 3 percent China has come to around 25 percent of the global manufacturing output. So, it was a very collective systematic effort of Chinese organizations, Chinese government that Chinese government created, what all enabling environment in terms of infrastructure was required, in terms of policies were required, and the Chinese people were committed to use that enabling environment.

Many a times in India what happens that we have enabling environment, but we do not use it, but here, it became a very unique combination, deadly combination, I say rather that the environment was created and then it was used also properly so that was the Chinese magic.

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The slide is titled "Decline of Chinese Magic" and contains three bullet points. The first bullet point is "Chinese Manufacturing started as supply of labor intensive, lower technology products." The second is "Chinese manufacturing has now entered into design and development of sophisticated engineering products." The third is "Though China continues to dominate the world in manufacturing, its proposition is no longer as compelling to companies, including Chinese companies, that are looking to expand their footprint beyond China." There are red handwritten annotations: a circle around "labor intensive, lower" in the first point, and an arrow pointing from this circle down to "design and development" in the second point. The slide footer includes the IIT Kharagpur logo, "NPTEL ONLINE CERTIFICATION COURSE", and the number "6".

Decline of Chinese Magic

- Chinese Manufacturing started as supply of labor intensive, lower technology products.
- Chinese manufacturing has now entered into design and development of sophisticated engineering products.
- Though China continues to dominate the world in manufacturing, its proposition is no longer as compelling to companies, including Chinese companies, that are looking to expand their footprint beyond China.

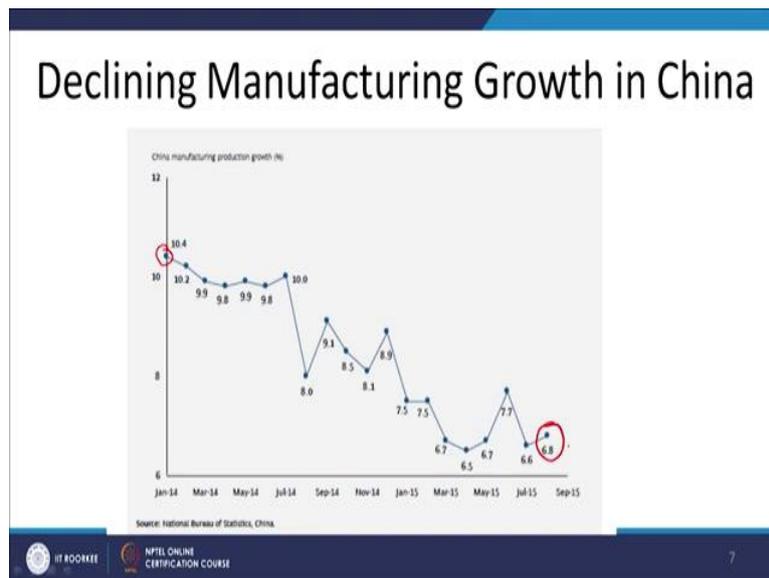
But now, as a global observer we see that there is some decline happening in this Chinese magic. Now, what is happening Chinese manufacturing started as a supply of labour intensive, lower technology products. So, initially, because China was also having a large number of unemployed population, so their initial emphasis was to provide employment to those people.

And initially, their focus was mostly on labour intensive activities, so they started supplying labour intensive products. Soon, Chinese manufacturing has now entered into design and development of sophisticated engineering products because automation came to China also. And as a result of automation, and they were very fast to adopt those automation, robots, industry 4.0, IoT, so for that purpose, they started making sophisticated engineering products.

So, from labour intensive they move to this sophisticated engineering products. Now, again that problem of unemployment will start because of this more automation. The third thing which require your attention, China continues to dominate the world in manufacturing, its proposition is no longer as compelling to companies, including Chinese companies that are looking to expand their footprint beyond China.

China is still a very very important you can say player in manufacturing, no doubt in that, that magic is still on. But nowadays, what is happening because of issues between China and USA, and within China also, more automation is happening, labour has become more knowledgeable. They have started asking more wages, so that low cost advantage of China is slowly moving away. And as a result of that, companies are started going beyond China, even the Chinese companies are also started moving beyond China.

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So, that is shown in this diagram with the help of this graph, that this was the production growth in the month of January 2014, Chinese manufacturing growth that was around 10.4 percent, and in the September 2015, this has come down to 6.8 percent. So, that is decline of manufacturing growth in the China.

So, continuously you see that though there are some fluctuations that in July 2014, it went down to 8 percent and then again, they were able to recover it to 9.1 percent, but if you see the macro trend from January 2014 to September 2015, you will see that there is a decline of around 3.67 percent, there is a decline of 3.67 percent in this particular period.

So, that means, the manufacturing output growth in China is on decline path. And when this news is available to us, it means, there are chances for other countries also to have a good share of manufacturing in their GDP. I am particularly emphasizing this point from India's point of view. So, if India can improve its productivity, if India can develop its output in a more rational manner, this decline of Chinese manufacturing growth can be a very good opportunity for India.

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Factors responsible for Chinese Decline

- Inflation in Chinese Wages
- Strengthening Yuan
- Cheaper energy in the West
- Declining costs of technology

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Now, if you go into the detail of factors which are responsible for Chinese decline magic, so this is already discussed that inflation in Chinese wages, strengthening of Yuan, cheaper energy in the west and declining cost of technology. So, these are some of the factors which are responsible, and as you see newspapers, as you read more about manufacturing activities in China in different articles, because this list is not exhausted, there may be more factors, which will be continuously added about decline of Chinese magic in particularly for the manufacturing activities.

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Newer Manufacturing Destinations

- UK ✓
- Vietnam
- Ethiopia

Various African-Countries

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Now, the third important global shift we discussed that development of new manufacturing destinations and new manufacturing destinations. UK we all know, England is trying very hard that because in England also the number of unemployed youth is continuously

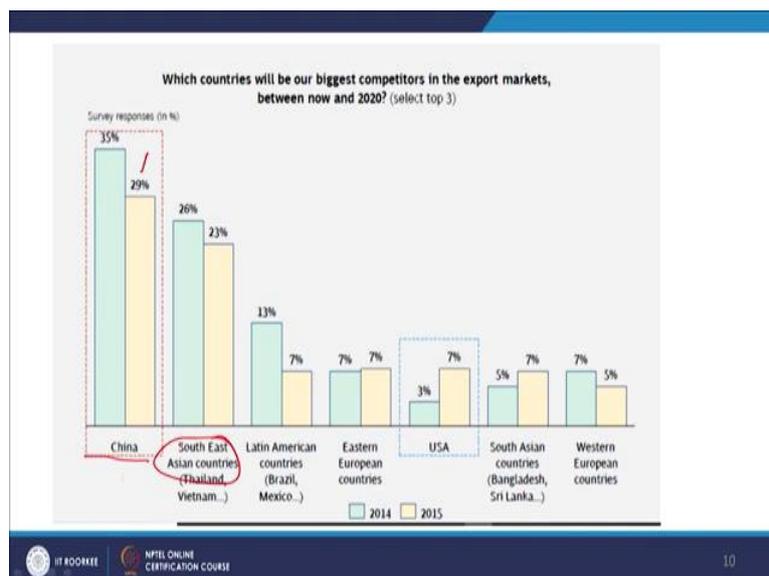
increasing. And you will really understand one important thing, that wherever number of unemployed youth going to increase, those nations think that manufacturing is the only solution, production activities are the only solution to solve this problem.

Donald Trump won the election on the basis of this promise that he will provide more employment to American unemployed youth. And the formula for that was again based on having more manufacturing activities. In India also, government is trying to increase the contribution of manufacturing and because government has to provide more jobs to unemployed youth so they think that manufacturing is possibility to provide that.

In UK also it is happening, their number of unemployed youth is continuously increasing, so UK is now thinking to aggressively go for more manufacturing activities. Vietnam is phenomenal and they are working very hard to make their economy a strong economy in this southeast region and Ethiopia, not only Ethiopia but various African countries.

These African countries are working very hard for developing a good infrastructure, so that they can attract global investment for their nation. And again, the objective is that this global investment will bring more employment to their local youth. So, this is the third important shift that we are moving to some new destinations for manufacturing. The traditional destinations, where manufacturing used to happen are in trouble because of development of these new destinations.

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Now if you see that, which countries will be our biggest competitor, I am talking in terms of India versus the rest of the world. So, you see that China is one big country which is going to

be our biggest competitor. So, presently it is there 35 percent of the respondents, there was a survey done by CII, so this is the response of that. And 35 percent people say that, it is presently our biggest competitor, and even in future also it will be. So, you see that number is there, but it will again weak.

Many of the people say that USA is not our that important competitor, but it is going to be it is going, it is a new policies under the new regime, which is happening that more Americanization is happening, so it will be an important competitor in the coming time.

Then you see as in my presentation, I am saying about Vietnam, Thailand, these Hong Kong, and in our coming classes also we will be continuously discussing, these all South East Asian countries are major threat for India, because these countries are very small in size but they are working very very hard to create a very good environment for investment.

A very good infrastructure, a very good law and order system and that is going to be a major challenge in the coming time. So, in the eastern part, not only China but Thailand, Vietnam, Hong Kong all these countries are going to be a tough choice for India, and different. So, this is just based on a survey kind of activity.

But the point is that we need to be geared up and we need to understand that how we can take the advantage of our resources and with the help of those resources, we develop a good competitive environment, which can help us achieve better objectives.

So, with this we come to end of this second session where we understood that what type of global environment is there and because we will be taking reference of this global environment when we will discuss various components of operations management.

So, it is important for my students to understand that in which type of environment we are living and how global things affect the working of an organization, and how proactively we can take the advantage of or how we can react to these global phenomena's, all these things are the requirement of a successful manager. So, therefore, in the beginning of this course itself, we discuss these various aspects. So, here we close this session. Thank you very much