International Business
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Lecture – 10
Leonteiff's Paradox, PLC Theory, National Competitive Advantage Theory, Factor Mobility Theory

Welcome everyone, to the class of International Business. So, in the last lecture we were discussing about the Heckscher Ohlin theory which talked about the labor and capital intensive industries basically and businesses related to that. So, and also we discussed about factors like what should a country, how much should a country trade with other countries, with whom should it trade, and which are the products that it should trade right!.

So, then after that we talked about the H-O theory right!. So, today we will be continuing from there and we will talk about a few more theories right!.

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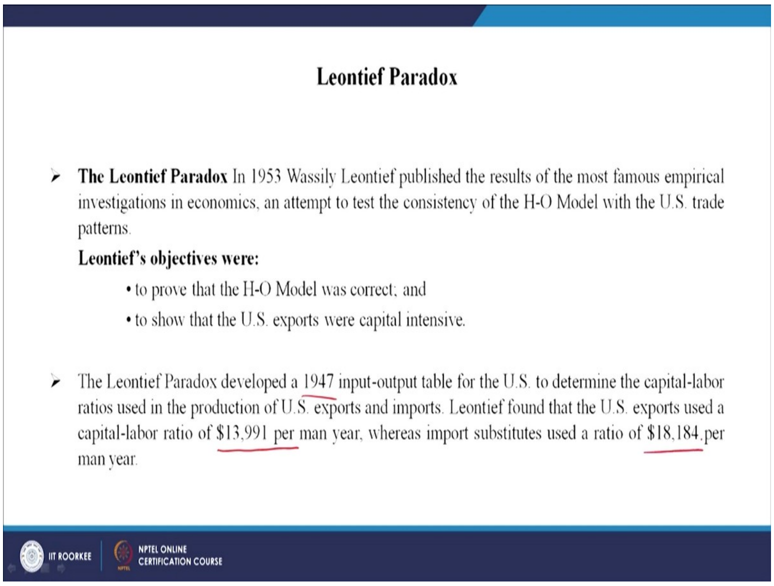

So, one of the most interesting theories was given by Leontief. So, Wassily Leontief in 1953 he published a result; his interest was to prove that the H-O model; that means, Heckscher Ohlin model was correct and to show that U.S. exports were capital intensive; it was his objective.

But interestingly he found a very opposite result right!. What happened was; so it said that the results of the Leontief's paradox which is one of the most famous empirical investigations in economics right!. And it is an attempt to test the consistency of the H-O model right! with the U.S. trade patterns.

So, it developed a input table from the 1947 data to determine the capital labor ratios used in the production of U.S. exports and imports. And interestingly Leontief found that the U.S. exports used a capital labor ratio of 13,999 per man year. Whereas import substitutes used a ratio of 18,184; let us see what is that.

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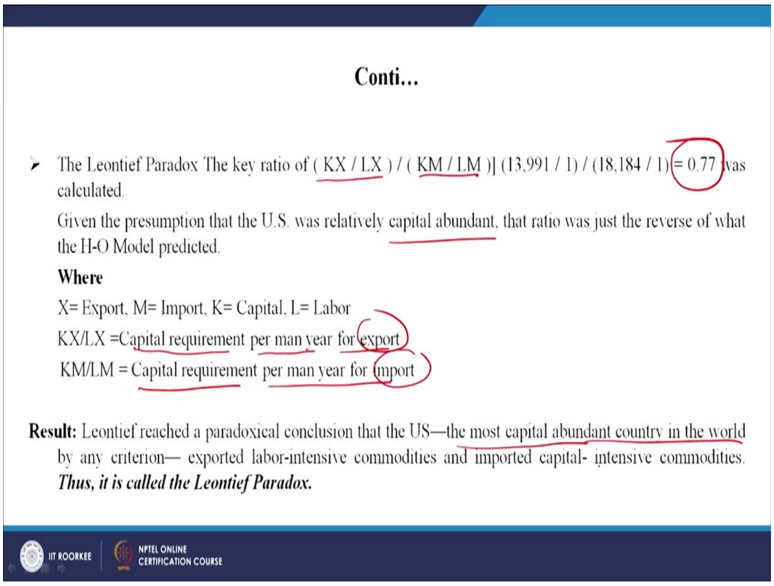

So, the Leontief Paradox; this is a key ratio of; K X / L X. What is K X? K X / L X is the capital requirement per man year for export. What is K M / L M? The capital requirement per man year for import ok!; this is export this is import.

Now as he had already found out so this value from here it was 13,991 for exports and import it was 18,184; so dividing this he got a ratio of 0.77. Now you see given the presumption; what was presumption? That the U.S. was relatively capital abundant so there is no doubt that U.S. is one of the economically stronger countries and it has a lot of capital with it.

The ratio was, but labor was thought to be the weaker one right! In terms of capital and labor, capital was much stronger in terms of the labor, but the ratio was just the reverse of what the H-O model had predicted.

What is the H-O model said? The H-O model had said if country is good in capital it would tend to export capital oriented goods intensive goods. And if it is good in labor then it would tend to export more of labor intensive goods right! But Leontief reached a paradoxical conclusion that the U.S. the most capital abundant country in the world right! exported labor intensive commodities and imported capital intensive commodities.

So, it was contrary to exactly what the H-O model was talking about. So, it was thought the U.S. should be importing lot of labor intensive goods, but on the contrary it was importing the capital intensive goods. And exporting it should have been exporting the capital intensive goods, but it has been importing rather exporting the labor intensive goods so the it is just the reverse. So, this is what is called as a Leontief Paradox and it is one of the very profound investigations, empirical investigation that is happened in economics.

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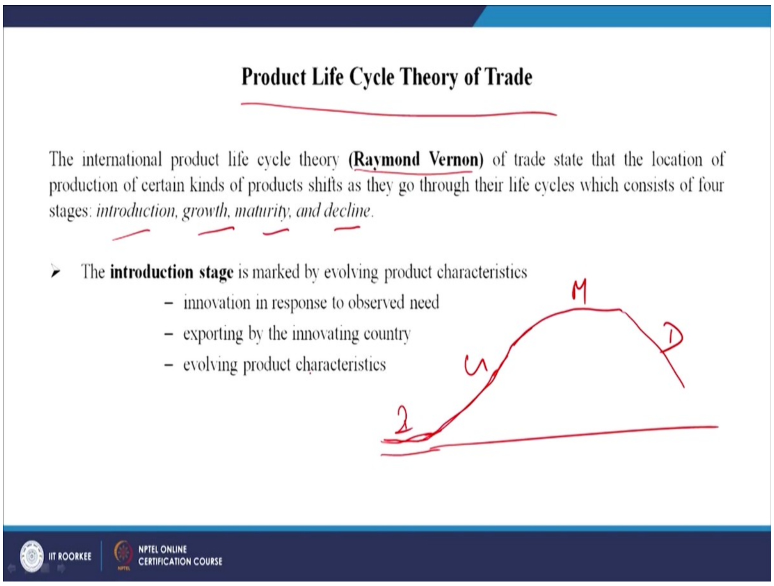

The next theory is called the product life cycle theory. So, Raymond Vernon had given this theory and he says that the international product life cycle theory of trade state that the location of production in certain kinds of products shifts as they go through their life cycles which consists of four stages; introduction, growth, maturity and decline. So, what is these four stages?

So, it is something like this; first it is an introduction stage right! so there is a very less growth and then it takes off. So growth and then there is a maturity right! and then there is a decline right! So, the shape could differ according to the industry and the product, but this is something how it look!s like introduction, growth, maturity and the decline.

The introduction stage is marked by evolving product characteristics, like; innovation in response to the observed need, exporting by the innovating country and involve evolving product characteristics.

So, in the introduction stage the product is being formulated it is being just made and the distribution network, the promotion everything is being arranged accordingly right! So, this is the stage where the companies do not make much of a profit right! and the products are newly being introduced into the market.

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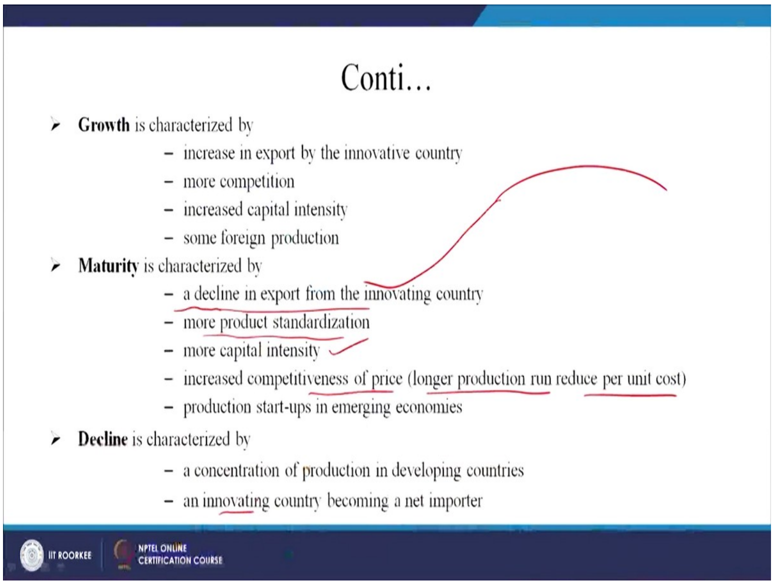

Second phase is the growth; where there is an increase in export by the innovative country. So, now, the country has started making more of these products and they have become an expert in producing these goods and they have become specialized experts right! they have got a specialization.

So, now, they are producing the goods in much cheaper and efficient manner so there is an increase in the export. Competition increases in this stage when there is a lot of profitability comes in so other players try to get into the market for the same product.

Increased capital intensity; so the capital to develop the new products during the growth stage is also increasing. And some foreign production also happens because you have to cater to a new market because of the demand in the foreign markets.

So, instead of producing and supplying as if we discussed in the last class transportation costs are very high when it is a large country like; India, China, and Russia or the U.S.. So, instead of having it we will have a production center at that place right! So, some foreign productions also starts happening so this is the growth stage.

The third stage is the maturity; now what is happening in the maturity? In the maturity now right! so let us say so maturity what is happening there a decline in export from the innovating country. Now why there is a decline in export from the innovating country.

The innovating country which made it now finds that new players are coming in who want to produce the same product. Now these players are producing it in their may be in their home market or may be other markets also, but they have an advantage may be in terms of capital, in terms of better technology.

So, what has happened is now they are able to produce at lower cost than the innovating country right! so that becomes a problem. So, there is a decline has started in the exports right! and other countries like India the you know China which are the new countries which are have developed. Now they are growing faster and they are exporting more goods which earlier was being done by some of the developed countries may be.

More product standardization; now in this is the stage where in a maturity there is no new products or new you know differentiation being created. The products are more or less standardized. So, it becomes simpler to produce economies of scale are achieved it is good that is the positive side. Again capital intensity is required because new players are coming in, competition is rising.

So, competition of price comes in; what it says longer production run reduce the per unit cost the economies of scale which I am saying. So, now, there is an increased competition in price. So, advantage will be taken over by a country or a company which produces in a large bulk and minimizes its cost ok!

Production starts up in emerging economies; so now, new production is starting in the emerging economies like emerging economies like India Mexico, Philippines, Malaysia, Thailand right!

The last stage is the decline a concentration of production in the developing countries; now large production base has started even in the developing countries. The innovative country now finds it is absolutely uneconomical to produce it on their own. So, they become a net importer and now they have stopped completely exporting ok!

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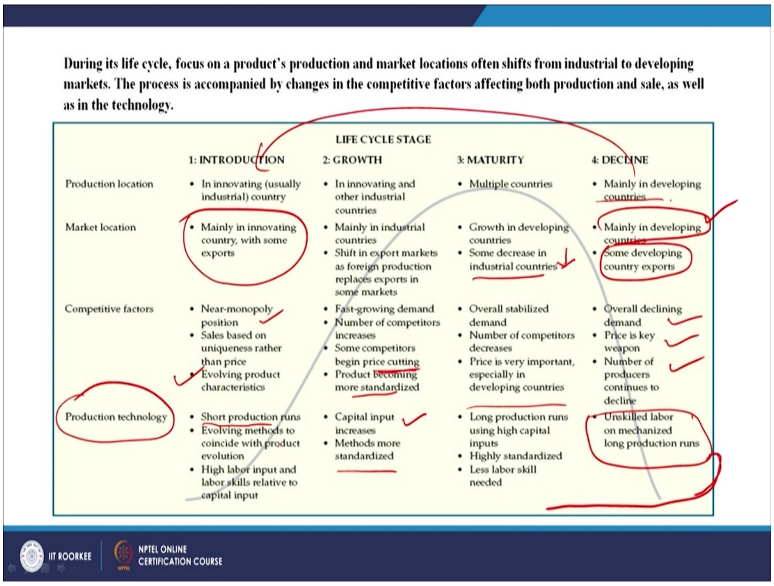

Look! at this diagram during its life cycle focus on the products production and market location often shifts so this is what we had said. So, product location so what is happening to product location in the introduction, growth , maturity and decline let us see in innovating usually in innovating country so the country which innovated right!

Let us say the developed country growth in innovating and other industrial countries. Now it shifts to the other industrial countries from there it goes to multiple countries. Now more number of countries the developing nations are also slowly coming in.

Decline stage; now it is becoming mainly in the developing nations right! and from the developing nations now this will get exported to the developed nations mainly in the innovating country with some exports. So, it is a first it is a home market, so we talk about the ethnocentrism if you remember ethnocentrism, polycentrism, right! geocentrism we had spoken in one class if you remember that so, it comes to the mostly focused in the home right!

Second what happens in the growth stage mainly in the industrial countries right! So, the market location is where it is being sold mainly in the industrial countries and shift in exports to the foreign production replaces export in some other markets too.

What happens in maturity? During maturity the growth, the market location the market expands in the developing countries. And there is a fall in the decrease in the industrial countries or the innovative country included right! During the decline stage most of the market location shifts to the developing countries and some developing country start exporting to they have started exporting in a large way.

Competitive factors; now coming to the competitive factors what happens to the competition? During the introduction it is a monopoly situation. So, there is only one player or somebody one only who is making it. Sales based on uniqueness rather than the price. So, price is not a factor during the introduction stage. It is the uniqueness of the product, how important the product is, how much demand the product has created right! And new characteristics that are involving in the product that is the introduction stage.

When the product comes to the growth stage now; how does the competition change? Fast growing demand; so demand is started growing, number of competitors are increasing, some competitors start price cutting; so there is a price cutting. Now, the you know developed countries will have a disadvantage because they have put a lot of they had R & D cost involved, they had introduction you know during the introduction a product is not immediately accepted by the market.

So, there is a law of diffusion it takes time to diffuse into the market. So, that time which they had spent now is they did not have much sales in that time so they made some losses now these losses will not be made by the developing countries because already the market is now created ok! So some companies begin price cutting and the product is becoming more standardized.

During the maturity stage overall stabilized demand so the demand is more or less known there is no much chance of expansion, competitors decreases. Now many some of the competitors will think of to stop the production. Price is very important because now it is a price competition. Anybody who can supply the product at a lower cost will win the war, chances are very fair.

Finally, if you come to the decline stage overall decline starts, price is the key weapon and number of producers continues to decline right! So, these are some of the things that happen characteristics in the decline stage.

Now, in terms of production technology when we come what happens to their introduction growth maturity and decline let us see. So, during the introduction stage you have short production runs; why? Because you do not know how much to produce; so you do not know exactly the you cannot forecast the demand in the market. Evolving methods to coincide with the product evolution; so new methods are getting evolved right!.

High labor inputs and labor skills relative to capital; so lot of labor inputs are required labor skills are required because it is a new product and nobody is aware. So, once the awareness comes then only you can adjust the technology to suite that production. So, that is not possible in the introduction stage.

Growth stage what is happening? Capital input increases so now, more money is being put into the develop the technology related to this product. Methods are more or less standardized ok! so now, there is some sense what is the demand? what is the design? that is required by the customer all things are known.

In the maturity now long production runs because it is a continuous production because the demands are known and we will try to achieve economies of scale and we would not do lot of switching during the production. So, switching costs are also less right! which is more in the in introduction stage.

Highly standardized and less labor needed now.Technology does most of the things. In the decline stage unskilled labor or mechanized long production runs why because now this is the stage where the developing countries are making it. Now the developed countries have left this market this product.

So, they are not interested to get into it any more rather they would try to get into new products and they would allow these developing countries to import this same product to them so right! So, this is the international product life cycle theory.

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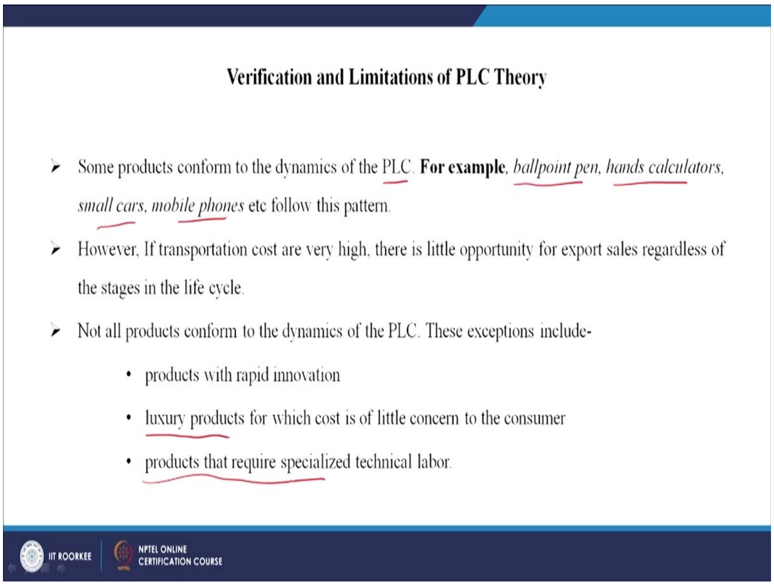

Now, what are the limitations of this PLC theory let us see. Some products conform to the dynamics of the PLC product lifecycle for example, ball point pen, calculator, small cars, mobile phones etc; however, if transportation costs are very high there is little opportunity for export sales regardless of the stage in the lifecycle. So, be you are in a introduction stage also, but still you would not like to export to other countries because you find that the transportation costs are very high and you have not achieved those kind of economies where the production costs are very very low.

Not all products conform to the dynamics example; products with a very rapid innovation. So, suppose every 15 days a new product is emerging a new design is emerging; so how would you tend to export? Because by the time you are ready with an order a new design is emerging; so that is the challenge.

Luxury products for which cost is of little concern; so we assume that from the introduction, towards the movement, towards the maturity the cost of production went down right! because of standardization and more knowledge about the production of the product and all. So, but luxury products they are products in which price is not a concern; so people are not bothered. So, these products will fall as a limitation to the PLC theory.

And third products that require specialized technical labor so this is something which others cannot copy. So, we said in this if you see what we said now something is being made in the introduction stage and during growth more people are copying that or imitating that.

And by the time it is declining the innovative countries has stopped producing and now it is being made in some other country right! the developing country. But that will not happen if a particular skill is required and that skill is not available with others right!

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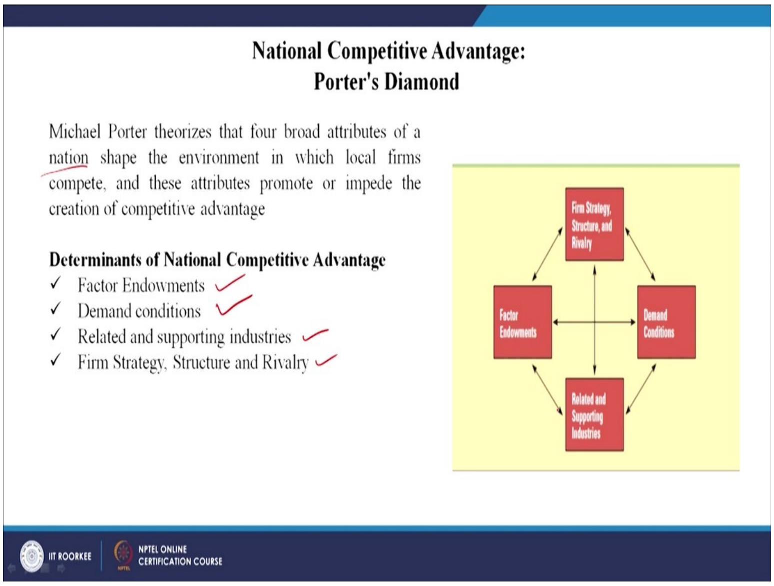

Then we go from the PLC to the Porter's Diamond theory the Porters national competitive advantage given by Michael Porter. So, Michael Porter theorizes that four attributes of a nation of a nation shape the environment in which local firms compete.

So, what are the four; let us see; the factor endowments; that means, your land, labor, capital. Demand conditions; what is the demand consumer demand right! Related and supporting industries so suppose to produce a product you require several other ancillary or auxiliary parts and services are they sufficiently available?

Firm strategy structure and rivalry; so how much what intense competition in the market is there? so, these four things will decide the nation's competitive advantage. So, this is also there is a book! title in the same name by Michael Porter if you want you can go through it also it is a very good book! with very lucid examples.

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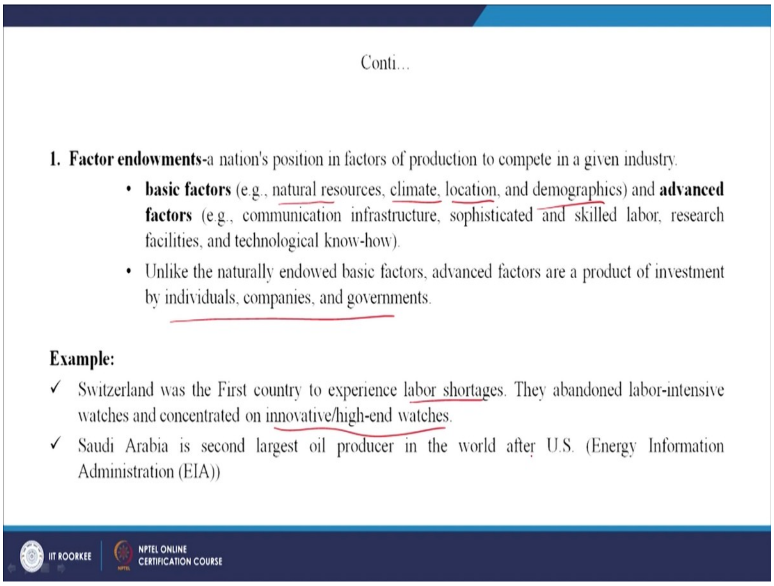

Now, first point factor endowment it says a nations position in factors of production to compete in a given industry right! Basic factors are like natural resources, the climatic condition, the location if it is close to some you know for example, port or sea or something it has a advantage of shipping you know easy transportation otherwise.

For example, if you see some other places for example, Mongolia it is centered and it is in a place where it is where the transportation cost would be immense because there is hardly any connectivity good connectivity through any way. So, and if you go by air it becomes very expensive and demographics and advanced factors like communication, infrastructure, sophisticated and skilled labor research facilities and technical knowhow right!.

Unlike the naturally endowed basic factors advanced factors are a product of investment by individuals companies and governments. So, your natural are what is god given right!, but whatever you did in the advanced factors that is not because of that is not available. So, that has been developed by people by through research and through scientific you know through scientific approach and lot of capital needs to be infused into it right!

So, R & D is involved in there example you see Switzerland was the first country to experience labor shortage they abandoned all the labor intensive watches and concentrated on only innovative high end watches.

They are very good in pharmaceutical in the area of pharmaceutical why? Because pharmaceutical industries are not labor they do not require labor they are more technically technology oriented right! So, all innovative high end industries became a you know pattern of they grew in Switzerland.

On the other hand you see Saudi Arabia is second largest oil producer in the world after U.S. and it is supplying lot of oil to other countries because that is a natural resource with it right!

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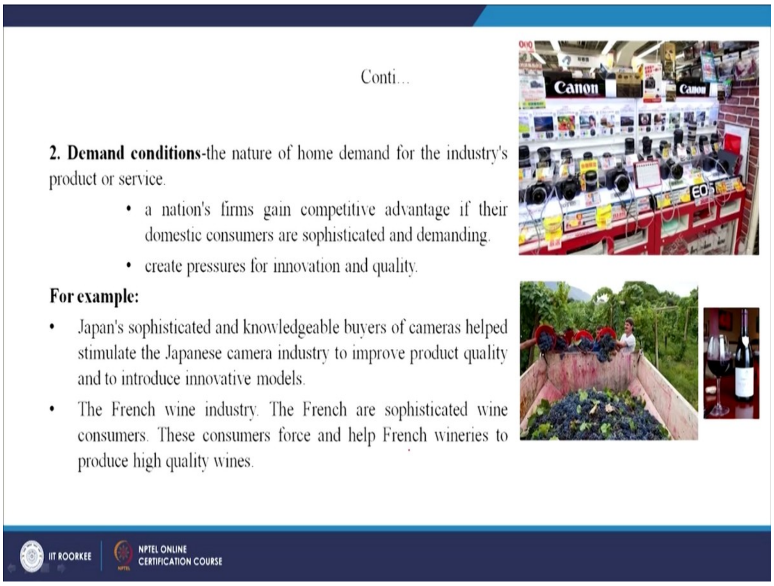

Second condition is a demand condition what it is saying; the nature of home demand for the countries product or service. So, what is the demand in the home country? A nations firms gain competitive advantage if their domestic consumers are sophisticated and demanding; why you know is an advantage? Because it creates for innovation and quality.

So, more demanding the products the people in the country are so there would be a large you know demand for you know every time the demand would change because you know of a pressure in the society, pear pressure, status and all these things the consumers would like to have all the time new new products. So, new innovations is a mandatory thing that has to be done. So, that supports the companies and the home country right!

You see Japans sophisticated and knowledgeable buyers of cameras helped the Japanese camera industry to improve the product quality and to introduce innovative models right!

Similarly the French wine industry the French are so sophisticated for wine consumers that they forced and helped the French wineries to produce high quality wines. So, this is all happened because the local people; you see why Indians have an advantage when it comes to things like you know algorithms because the Indians have been always good at mathematics right! So, our ancestors and from forefathers it has been coded in our gene.

For example, I am going to say that we are naturally good at math's; so that is why Indians you will see they are very good IT people, there are very good scientists from India. So, that is the basic reason is that we are good at statistics and you know mathematics right!

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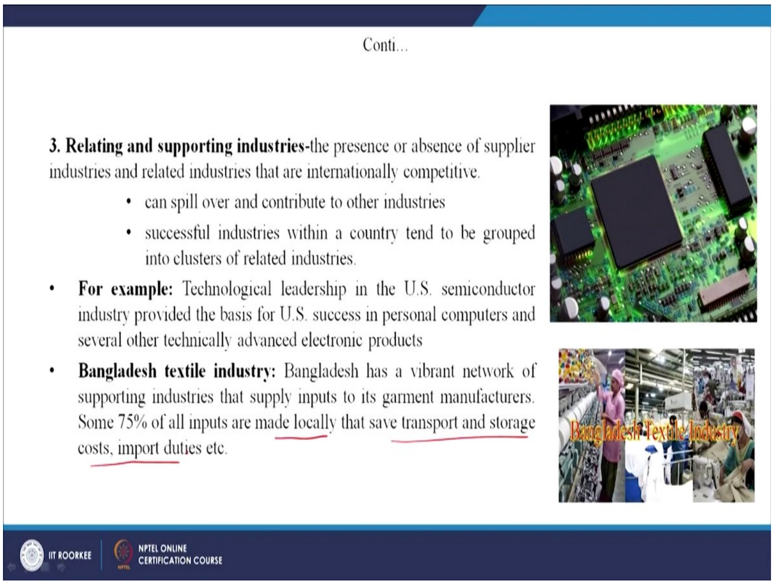

Relating and supporting industry; the presence or absence of supplier industries and industries and related industries are that are internationally competitive. What it has to mean? Can spill over and contribute to other industries right! Successful industries within a country tend to be grouped into clusters.

For example, the technological leadership in the U.S. semiconductor industry provided the basis for US success in personal computers had U.S. not had an advantage of semi conductors it would not have been one of the largest producers of computers personal computers. And several other technically advanced electronic products including the Apple may be right! the Apple like products.

So, what it says; suppose a country has a is producing something and whatever the local the other auxiliary parts are required to produce the main product a main product may require the OEM may require several other products right! So, if these products are not available then it becomes very difficult ok!

Bangladesh textile industry; Bangladesh has a vibrant network of supporting industries that supply input to its garment manufacturer. So, for a garment manufacturer there are several other things that are required right! in terms of technology and other support. So, 75 percent of all the inputs that a textile industry requires are made locally which saves the transportation and storage costs and even import duties.

So, that is why Bangladesh has been you know even when the you know the quota system was abolished right! after the Uruguay round. (Refer Time: 22:31) Still everybody felt that Bangladesh would do very badly in the textile sector because it was only getting a protectionary quota, but it did not happen that way. Bangladesh rather did better and better in terms of the textile export right!

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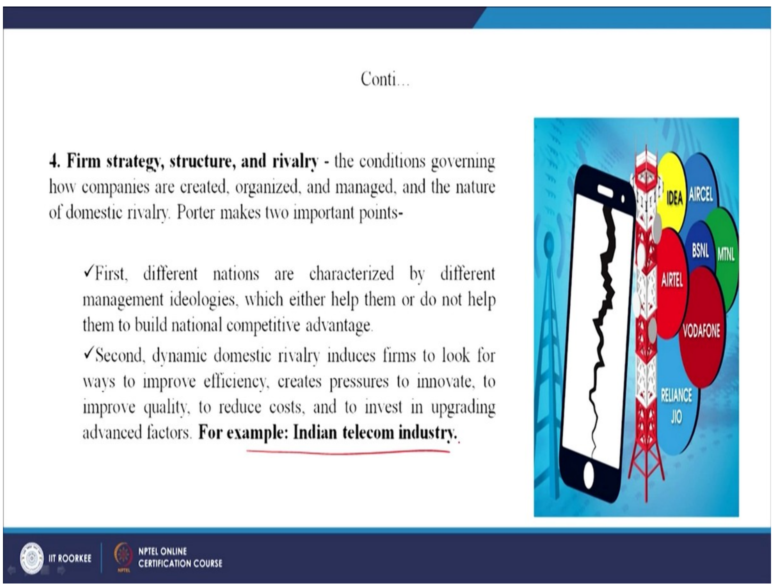

The last point is the firm strategy structure and rivalry; so the conditions governing how companies are created, organized and managed and the nature of the domestic rivalry right! So, Porter makes two important points; first different nations are characterized by different management ideologies right!

For example, you see there is a very famous saying that the Japanese are always they want to be 100 percent correct. On the other hand, the U.S. management would like to be close to 100 percent, but not 100 percent right! Because that difference in the last few percentage takes a lot of time and effort right! So, this ideological difference is a reason which also creates a structural difference which either help them or do not help them to build national competitive advantage.

Now for example, when we talk about Germany and we talk about machines we cannot think other then German machines, why? Because these people have created and you know they have organized and managed and they have created such companies which are excellent in producing these kind of goods right!

Second the dynamic domestic rivalry induces firms to look for ways to improve efficiency. Now in Germany for example, you see if there are so many producers of engines and high tech machines. Then automatically there is a competition and the you see any trade starts from the home market right! so we say first is ethnocentric.

So, first thing is that whether you are how you are doing good. Once you do good in the domestic market then generally that is generally then you go to the export or the international market. It is never that somebody starts you know producing a new product to for the international market it cannot happen. Yes, if the product is already existing and a new manufacturer tries to install a assembly or a commission a plant and export it that is a different story.

But a new product start and somebody wants to directly export it is not possible. Because he or she himself the company himself is not sure about the quality of the product right! So, what it says the domestic rivalry induces firms to look for ways to improve efficiency, create pressures to innovate and to improve quality.

So, this reduces the cost and help investing in the upgrading the advanced factors. So, now, the companies would look! in to put in more money invest more money to upgrade their technologies to produce at a much lesser cost and at a better quality product right!

So, one example is the Indian telecom industry. So, Indian telecom industry is now looking at because of a huge market many of the companies are coming to India and establishing their plants right! to set up to buy to produce the phones right! mobile phones especially. So, this is what even you go to the if you look at India is still second example I would give. The number one I can think of is China.

So, why is that every product is being made in China because China the production the government is supporting production in China so much that it has helped creating lot of pressure among the Chinese companies which has resulted them to be more efficient in terms of production, technology and everything. And that is why when they export the same good to other countries they can easily beat them because of a high advantage in terms of the price.

And even now very good quality also quality it is not always that the Chinese goods are inferior. There is a notion that Chinese goods are inferior that is not correct right! They have archived an advantage because they have the government support has and it has streamlined the production system so well that today China can easily compete with many of the countries. And it has it has excelled than many of the countries in terms of its production right!

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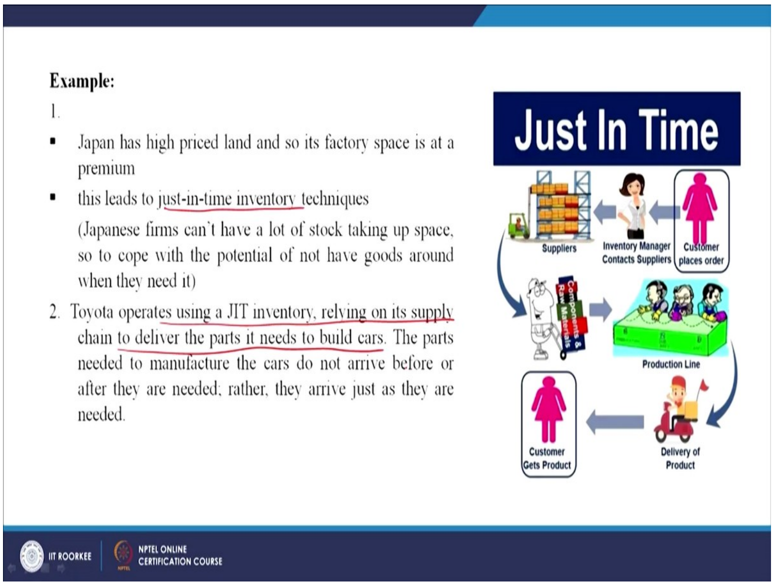

So, this example you can take; Japan has high priced land and so its factory space is at a premium this leads to just in time inventory techniques. So, what is just in time? I would like the inventory only at the time when I require it, so I do not want to store it in some place. Because storage is more costlier and I do not have space. So, Japanese firms can not have a lot stock taking up space so to cope with the potential of not having goods around when they need it they are using the just in time inventory right!

Toyota operates using a JIT inventory relying on its supply chain to deliver the parts it needs to build cars. The parts needed to manufacture the cars do not arrive before or after they are needed rather they arrive just as they are needed. So, this is the just in time theory.

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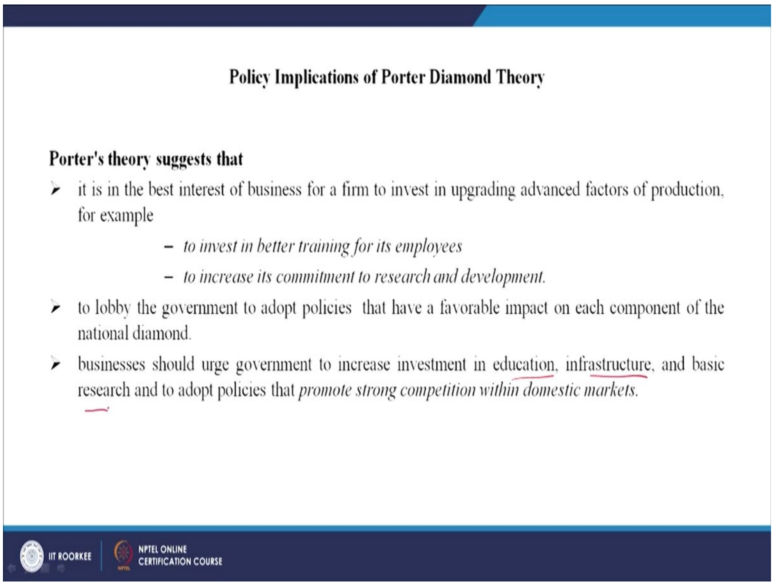

So, the policy implications of the porter demand we will maybe we will wind up here. So, what it says porter suggests that it is in the best interest of business for a firm to invest in upgrading advanced factors of production.

For example; to invest in better training for its employees, to increase it is commitment to research and development. So, more R & D new products, new innovations and new innovations means new you know new markets right! To lobby the government to adopt policies that have a favorable impact on each component of the national diamond so the four parts right!

Businesses should urge government; so that is the policy implication of what Michael Porter said to businesses should urge government to increase investment in education infra and basic research. So, this is a transition time which India is going through. So, India has grown very fast in the last few years and especially in the last 5-6 years because of a huge investment in infrastructure and education.

So, the Indian governments have done it very nicely, they have tried to develop the education infrastructure. Because earlier it was not so good and India was very under kind of a developing nation only. But today the word developing for India may not be suitable it is more of a developed nation closed to a developed nation.

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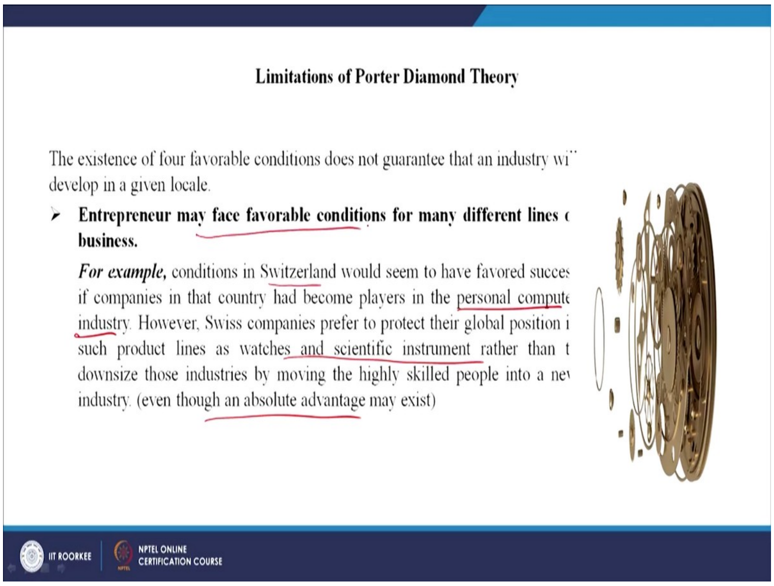

And to adopt policies that promote strong competition within the domestic markets. This is a one limitation so what are the limitations let us see. Entrepreneur may face favorable conditions for many different lines of business right! So, what it says limitations of the Porter's theory the existence of four favorable condition does not guarantee that an industry will develop in a given local.

So, if you think that I have an advantage of labor I will do good in a labor intensive industry, may not hold correct. You see for example, conditions in Switzerland would seem to have favored success in the personal computer space, but somehow Swizz companies prefer to protect their global position in product line such as watches and scientific instrument rather than the rather than the other the personal computer right!

Even though an absolute advantage may exist had they gone for the personal computer so that does not happen; why? Because, the entrepreneur may face the favorable conditions for some other good right! or that looking at the demand right!

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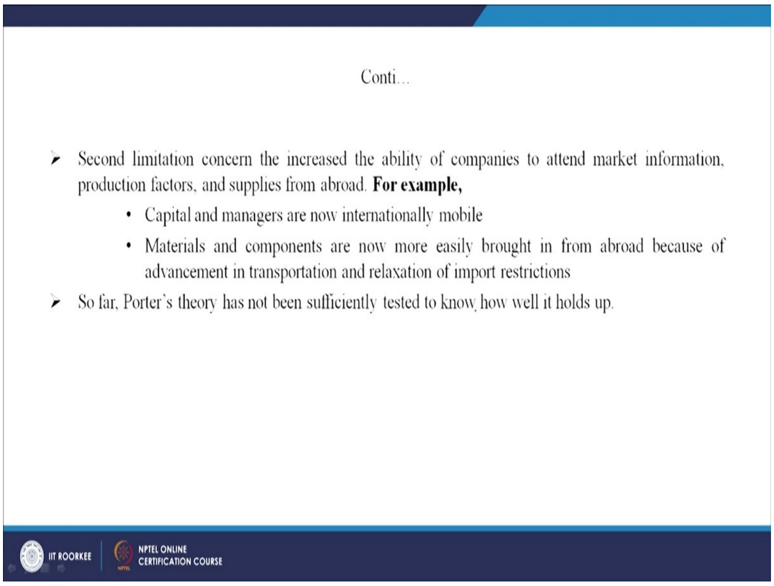

Second limitation is what it says is that; the concerns, the increase the ability increase ability of the companies to attend market information production factors and supplies from abroad.

For example, earlier times it was it was highly restrictive. So, if you wanted to get something from abroad it was a challenge, but today capital and managers are now internationally mobile. So, you can there is an easy flow of money and easy flow of human resource. Materials and components are now more easily brought in from abroad because of advancement in transportation and relaxation of import restrictions.

So, because of the free trade theory now it has become more easy right! So, Porter's theory has not been sufficiently tested to know how well it holds up. So, far it has not been tested.

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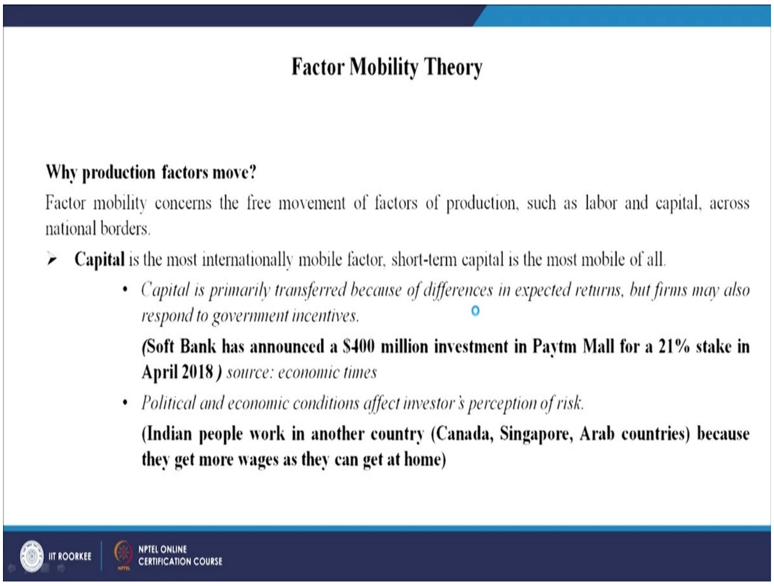

So, these are some of the limitations right! So, today we will wind up with this Porter's theory where it speaks about; how what are the four factors and how they influence any government any trade right! within a country. And today we discussed about these things the Leontief's paradox and then Porter's model and I hope you are clear with it.

So, we will continue from here in the next class and bye then take care.

Thank you very much.