Business Development From Start to Scale
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Week - 11
Strategies for Markets and Industries
Lecture - 53
Fragmented Industries and Emerging Industries

Hi friends, welcome to the NPTEL course Business Development from Start to Scale. We are in week 11 with the theme of Strategies for Markets and Industries. In this lecture, the 53rd in the series, we discuss the topic of Fragmented Industries and Emerging Industries.

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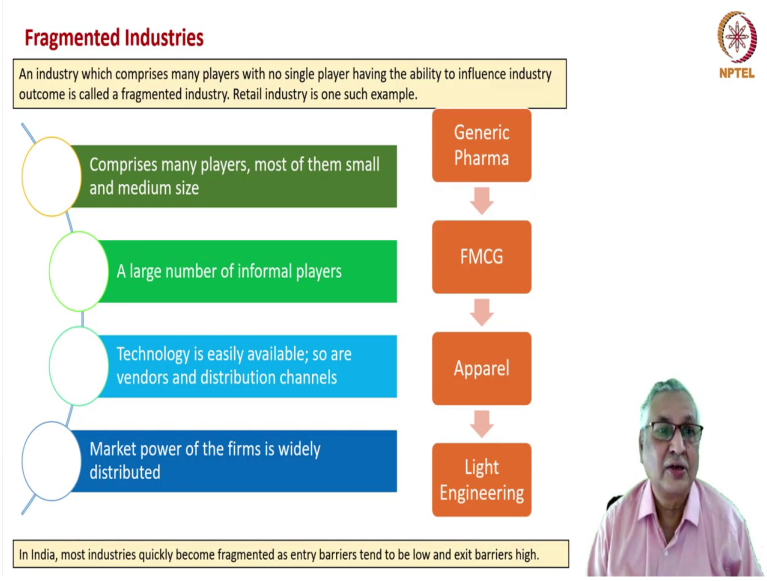

First, fragmented industries. What are fragmented industries? An industry which comprises many players with no single player having the ability to influence industry outcome is called a fragmented industry. Let us say you have 20 players in the industry, out of which one player has the potential to influence the industry and 19 others do not have any potential.

That would not be called a fragmented industry. It would rather be called a concentrated industry. A fragmented industry is one where everybody is split into many equal parts and no one has any capability to influence the industry direction or industry movement compared to any other.

Retail industry is one such example. A fragmented industry comprises many players. Most of them would be small and medium size. A fragmented industry would also comprise a large number of informal players, that is, players who are not registered, players who are there in every nook and corner, but cannot be seen to be large players.

Technology is easily available in a fragmented industry. So, are vendors and distribution channels. Market power of the firms is widely distributed. Some examples of the fragmented industries are generic pharmaceutical industry, even domestic Indian pharmaceutical industry, FMCG, Fast Moving Consumer Goods, apparel, light engineering and several other ancillary items to the mainstream industries.

In India, most industries quickly become fragmented as entry barriers tend to be low and exit barriers high. The case of the domestic formulation industry in the Indian pharma is a case in example. The barriers to entry are very low. Anyone can set up a tabulating facility or a capsule making facility based on bulk drug that is supplied by other players and a few missionary that are required for tabulating or capturing as necessary.

And that enables every small entrepreneur to get into the formulations business. That is why you can see thousands of brands and several hundreds of players in the domestic formulation industry. Even the largest of companies do not have market shares in excess of 5 percent. That is the level of fragmentation.

What happens when such industries become fragmented? The barriers to entry being low, the barriers to technological development tend to be high.

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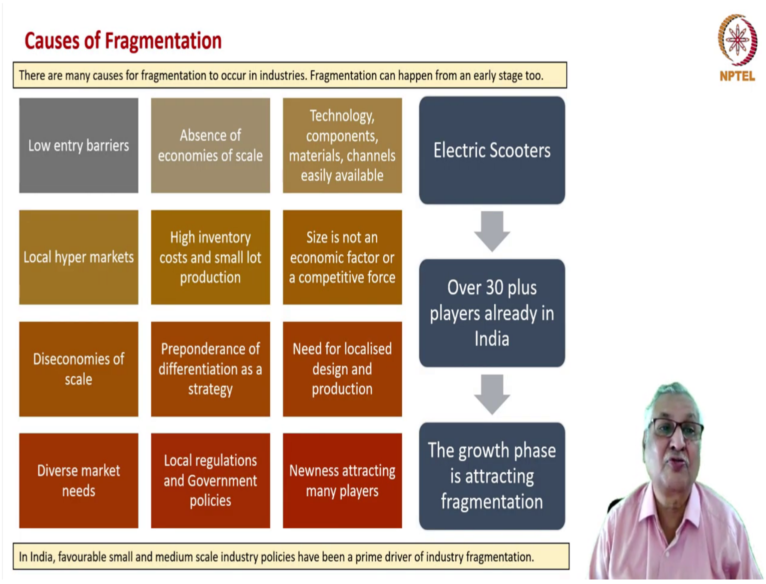

What are the causes of fragmentation? There are many causes for fragmentation to occur in industry and fragmentation can happen from an early stage of the industry too. Fundamentally, the cause of fragmentation is the low entry barrier. That is you can set up the business with the least possible investment. Setting up consultancy is easily possible without significant investments.

So, it is a low entry barrier industry. Setting up an oil mill or a rice mill is feasible at a very low scale and with low investment. That is a low barrier industry. Setting up a charted accountancy business is a low entry barrier industry. There are several such industries where the entry barriers are not high. We have seen in earlier discussion that entry barriers are those related to technology.

The investments required, the facilities required and the requirements to get governmental approvals or regulatory approvals. So, low entry barriers constitute the fundamental driver for fragmentation of an industry. Then several other reasons exist, absence of economies of scale. Technology, components, materials and channels are easily available. So, you can mix and match.

You can produce a product of Europe which is again one of the reasons why the smart variables industry has seen several models because the technology is easily available. The operating systems are available. Components from China or Switzerland are available and assembly capabilities are available within the country.

Then there could be a local hypermarket which is triggering the entry of companies. That is when there is good business in a community. It is a trigger for small players to enter that market with little investment. So, local hypermarket is one of the important causes for fragmentation.

Then there could be a causes related to high inventory costs and small lot production. That is the industry is suitable if you are able to do it in batches rather than in continuous standard throughput production. Let us say heavy engineering activity which is required for a railway yard and that can be done in small lots and if you try to do it at high scale the inventory costs will be very high.

The preference therefore, is to remain small. Fragmentation will also be resorted to when size is not an economic factor or a competitive force. When you feel that you can earn reasonable returns without the pursuit of scale, it is an incentive for entrepreneurs to enter into that market.

Particularly those who would like to be self-employed. Particularly those who would not envisage themselves to be big time ticket players would be enthused by the fact that in certain industry size is not an economic factor or a competitive force. So, if you are a master tailor you can enter the new cloths business or new apparels business and secure a small niche for yourself.

When there are diseconomies of scale again the fragmentation happens. Preponderance of differentiation as a strategy that is everybody tries to differentiate oneself through one feature differentiation as an example and the more features a product has and the more differentiation the players do.

The proliferation of players in the industry increases. Therefore pursuit of differentiation as a strategy by multiple players could lead to fragmentation in an industry. Fragmentation also would occur when there is a need for localized design and production that is each ethnicity or each region varies in terms of its tastes, its preferences, its design requirements and also it encourages local production.

There are cases when a local brand is promoted by the market and in such a case it is helpful for companies to come in hyper locally and set up their ventures. It happens in the television field, it happens in the small time branded products which are related through language to the different regions.

When the market needs also a diverse that there is space for everybody there would be requirement of fragmentation. When local regulations and government policies support small and medium enterprises and even micro enterprises there would be fragmentation in the industry.

When an industry appears new there would be a lots of entrepreneurial interested players in the industry and that newness attracts many players and it causes fragmentation. In India, favorable small and medium scale industry policies have been a prime driver of industry fragmentation. Fragmentation can happen even in high technology industries. Electric scooters is theoretically a high technology industry, but already we have our 30 plus players operating in the electric scooter business in India.

Every growth phase attracts fragmentation. The higher the perceived growth the higher would be the number of entries into the industry. So, the causes of fragmentation are many, some are strategic, some are structural and some are regulatory.

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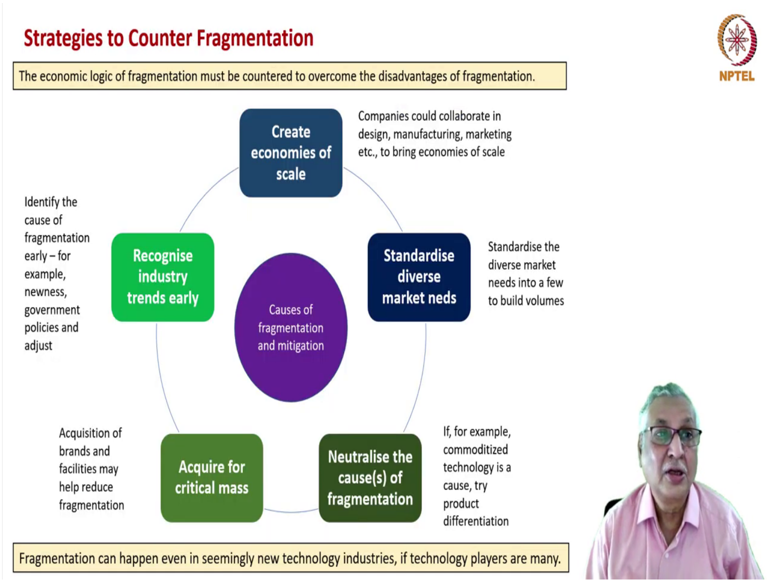

What are the strategies available to counter fragmentation? Every business strategies and every business development executive must understand how to cope with fragmentation on one hand and also how to counter fragmentation on the other hand. Fragmentation as we have seen has its own economic logic, has its own low scale logic, has its own hyper locality logic. Just to quote a few examples, you should be able to counter this economic logic of fragmentation with appropriate strategies.

It is very easy to have a laundry serving two, three neighboring communities. That is the advantage of a small entry and therefore, fragmentation of the laundry industry. However, if you are able to counter this hyper local nature and the resultant economies of scale with a centralized laundry which has several other business model supports along with centralized economies of scale, probably you would be able to counter the fragmentation.

So, let us look at some of the ways in which you as a business developer or a business strategist can counter fragmentation. One create economies of scale. Companies could collaborate in design, manufacturing, marketing etcetera to bring economies of scale. It is not necessary that every company in the edible oil industry should conduct business in every oil.

Therefore, they might use their facilities to provide the products to someone else to market or everybody would like to present themselves in the marketplace, but not all would be wanting to have their own manufacturing facilities in which case collaboration in manufacturing take place.

So, there would be hidden economies of scale that could be created even in a fragmented industry. Secondly, you should try to standardise diverse needs particularly when you have developed a fragmentation in the industry based on multiple market needs which are differentiated in terms of the product or service. You should standardise the diverse market needs into a few needs. So, that the volumes can be built.

You should neutralise the causes of fragmentation at another level. For example, if commodities technology is the cause, try to have superior technology, try to have technological differentiation or use the same technology in a novel way. So, that the product looks and feels different. Another way you can counter fragmentation is acquire other companies for critical mass that is when fragmentation is occurring in industry, it is not that valuations would be super high.

Many companies would be available for acquisition and if you are a company which has reasonable deep pockets, you could probably work towards enhancing your market share, enhancing your facility capability by acquiring companies which are available for sale. So, acquisition of brands and facilities may help reduce fragmentation and you may also be helping in the overall industry consolidation and improvement of the structural realities of the industry.

The other thing is to recognize industry trends early, identify the cause of fragmentation early for example, newness, government policies and adjust and do a strategy that will enable you to completely capitalize on those factors. So, that others are (Refer Time: 12:53) to enter the industry. As I said fragmentation can happen even in seemingly new technology industries and that happens when technology players are many.

In such a case, you have no option other than differentiating yourself in terms of technology to be able to be one up in a fragmented industry.

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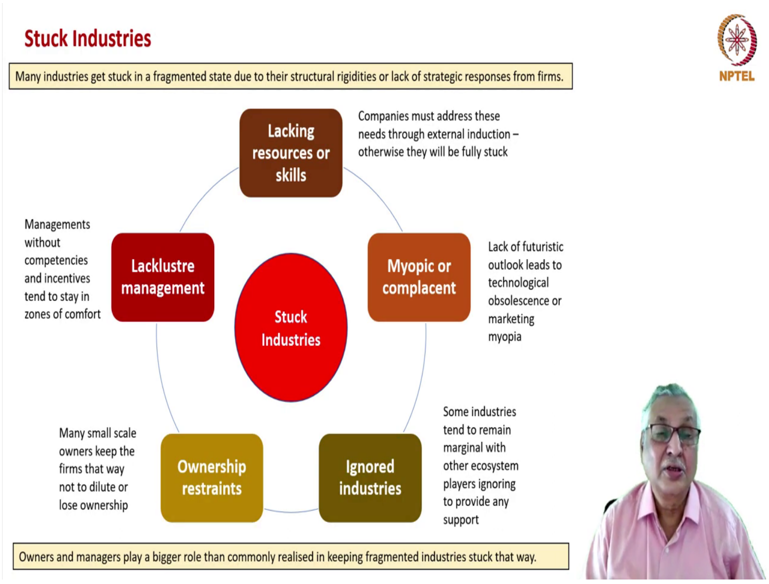

Some industries in the fragmented industry get stuck because every company in any fragmented industry must strive to be above the average performance. But if you are not able to do a few things, you are likely to be stuck in a fragmented industry that could happen because of the structural rigidities of the company or lack of strategic responses in an appropriate manner from the firms.

Let us look at companies which operate in fragmented industries which have turned stuck. Firstly, such companies lack resources or skills. They do not have the necessary financial where we thought to upgrade themselves. They do not have access to necessary talent to do things in a different way. Companies must therefore, address these needs through external induction. Otherwise, they will be completely stuck in a fragmented industry.

Companies in the fragmented industry do not have big organizations or forward thinking people. They could therefore, turn myopic or complacent. They will say that as long as I am earning a few bucks, that is reasonable returns, why should I do something different? So, lack of futuristic outlook on the part of companies could lead to technological obsolescence or marketing myopia.

So, a number of local brands which are existing in the FMCG space display this kind of myopic or complacent methodology of thinking, expressing themselves and acting. But when a giant enters the industrial scene, all of these brands may be acquired or swept away. Therefore, having a futuristic outlook is one of the important requirements for a company to rise above the rest in a fragmented industry. Otherwise, the consequence is to get stuck. The other is when the industry itself has become an ignored industry.

People do not think highly of the industry. Some industries tend to remain marginal with other ecosystem players ignoring to provide any support. So, let us think of a nut and bolt industry which has been catering to the conventional automobile industry. Let us say the technology evolves and new methods of developing the chassis through monocoque welded construction come around along with the electrification of vehicles and light waiting of vehicles.

So, if the nut and bolts industry and the constituent players continue their business without understanding what is happening in the external environment, they are likely to be marginal players that industry will not be taken seriously by anyone else in terms of investment or dipping into the industry for any inputs.

Therefore, that industry will become a stuck industry. There could be ownership restraints. These are genuine restraints that happen in fragmented industries because you are operating at a low scale. You do not have the ability to generate finances to become anything different than remaining small. So, many small scale owners keep the firms that way.

And one of the reasons for that again is not to dilute or lose ownership. Many times the firm which is established is tantamount to the family employment. It is generational avocation. So, you can see many people who have been manufacturing suitcases in towns and that skill or that business passes from generation to generation.

You see that happening in the food industry or in the street food sector. People who have been doing food services as a business pass on the batton from generation to generation. This is also true in tailoring industry where it moves. Why for that matter even the movie industry is an industry where people would remain fragmented so many directors so many craftsmen exist. They have only couple of movies or two three movies to work on, but it is a generational avocation.

So, people remain in that industry. The other is lacklustre management. That is the managements in such industries and such companies do not have competencies and they do not have incentives and therefore, they stay in their zones of comfort. These are the five reasons why a fragmented industry becomes a stuck industry as well.

Owners and managers play a bigger role than commonly realized in keeping fragmented industries stuck that way. So, if you want to change the nature of the industry from fragmented industry to a rejuvenating industry or if you want to individually take the company out of the fragmentation constraint to one of dominance or even take the company to another adjacent industry you need vision, you need finance and you also need management capabilities to achieve that.

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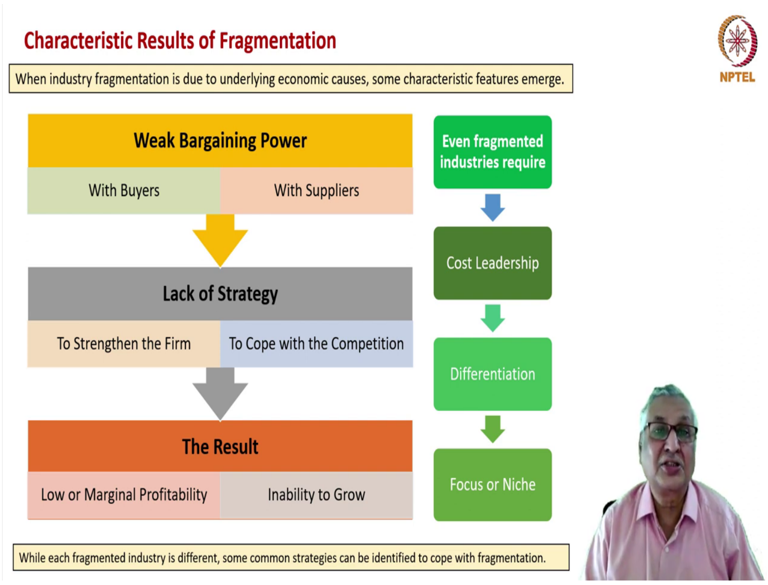

What are the results of fragmentation? Where you concerned about fragmentation? When industry fragmentation is due to underlying economic causes there are some characteristic features that emerge and they are also not good for the health of the industry. They are also not good for the health of individual, constituent companies.

Fundamentally fragmented industry will have weak bargaining power that is the players in the industry are unable to bargain to get what they are due. This happens when big organizations tender for their requirements be the cotton requirement for a hospital, the linen requirement for a hotel be it the sanitizer requirement for a retail shop, tenders are issued and many small players who constitute a part of the fragmented industry bid, but did not have any bargaining power because it is all a game of one against the other.

So, this weak bargaining power with buyers and with suppliers acts to the disadvantage or to the detriment of industry upgradation. So, this is one poor characteristic result of fragmentation. In second with no envisioning of the broader horizon and with an ability to look beyond the obvious and with getting stuck on day to day operation there would be lack of strategy in a fragmented industry and that fails to strengthen the firm and the company will not be able to cope with the competition.

When you are not able to look at the next day or the next week or next month, but you are stuck in today how would you plan for a strategy. So, it requires breaking of the shackles of day to day performance to be able to lift a company account of fragmentation. When weak bargaining power and lack of strategy dominate and constrain a functionally operating company the result would be low or marginal profitability and a complete lack of ability to grow.

But even fragmented industries require strategy. They require one of the three strategies of cost leadership differentiation and focus or niche. Why? The only way to differentiate yourself in a fragmented industry is to be seen to be superior in terms of your cost or you can be seen to be superior in terms of your differentiation.

That is you are a part of retail industry and we know that every community or every neighborhood has three or four retail shops and when you have three or four retail shops how can you differentiate yourself you can differentiate yourself by having more products on the shelf having better prices for the products or service the customers much faster than what the other competitors to do.

Therefore you can definitely differentiate yourself even in a fragmented industry by working on the four piece of marketing that is the product, price, promotion and the place and the focus or niche is also a strategy that is relevant for the fragmented industries and the players in the fragmented industry.

You can be seen to be different even amongst the large clutter of players that exist in a fragmented industry and that could happen by being ultra customized that is you are in the tailoring industry and we know that there are many tailors and some tailors are attached to the readymade shops as well as clothing shops then how would you compete?

If you are able to have the skill in tailoring in such a way that the product is highly customized and you have master tailors with you will be able to differentiate while anybody may approach any tailoring shop this differentiation may get additional clientele that is how players in a fragmented industry must play to their strengths and adopt one of the three generic strategies cost leadership, differentiation and focus or niche to be able to survive and grow in the fragmented industry.

While each fragmented industry is different some common strategies can certainly be identified to cope with fragmentation. I have been talking about several industries which are different in their characteristics as you know light engineering is quite different from mass retailing it is also different from roadside automobile maintenance.

It is also different from tailoring or food supply or restaurant business all of these things are different they are all fragmented industries; however, you can have some common strategies which you can utilize to cope with fragmentation.

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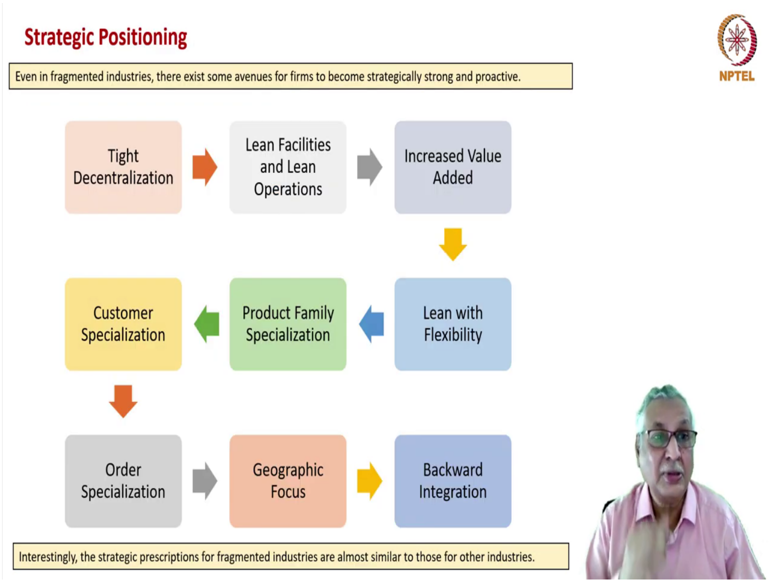

Some avenues exist for firms to become strategically strong and proactive in a fragmented industry you can do that by tight decentralization that is you do not let disparate strategies getting implemented or disparate tactics getting implemented in different departments. You have to make sure that the order to cash cycle is done in a very robust manner and that is possible when somebody has an entry and understanding of how to perform today's operation or tomorrow's operation.

Let us look at a restaurant business you must be able to analyze how in each day of the week the business will fluctuate you must be able to understand who are the regular customers and who are the transient customers or fleeting customers you should be able to understand what are the preferences in terms of the menu.

When you understand you will be able to take decisions on the kinds of inputs you need to have from vegetables and the spices to the oils and various other things which are required including deployment of cooks and the servers if you are in a variable employment mode.

So, that is one part of the tight decentralization and the owner manager has the best ability to do that. Secondly, you should have lean facilities and lean operations. You need not like a mainstream company equip yourself for the peak demand rather you look at a demand situation which could be an average demand situation.

And you set up your facilities and operations to match that and in case you are able to see higher demand you will be able to get your requirements from another entity as an example let us say you are in the business of supplying medicines and you have a shop for that you are in the medical supplies business therefore, it is a fragmented industry in any street you can find four to five medical shops.

There is no point in trying to meet every patient requirement every prescription requirement while that is ideal it is if you do that your inventory will go ups very much. So, what you can do is to understand the 90 percent of the medicines that are taken by your patients and the doctor prescriptions and definitely plan for that and stock them, but you should have an arrangement with the shop next door to be able to bring those products which are not in your list.

In fact, wisdom requires that the owner managers of these kinds of facilities or entities get together understand mutual demand patterns and complement each other and learn to live together rather than compete to their demise. That the third approach strategically speaking is to increase the value added that is you try to offer additional products again taking the example of the medical business you can supplement it with day-to-day cosmetics or day-to-day groceries which are more in the nature of personal care that could help the evaluation from the company.

You should be lean, but you could also be flexible as well that could be one of the ways in which you could strategically position yourself. That is you say that yes I do not have the product, but I can get you within two hours that provides dynamism and flexibility to your business strategy. The other one is to get known only if as a product family specialist that is if I need to go to this firm or to this company for this specialization I do not need to look around anywhere.

If you are able to establish that level of quality standard that level of compliance standard to one product line then you would position yourself strategically. The other thing is to have customer specialization that is you build your relationship with the customers in such a manner that they would have repeat customers and there would be purchase stickiness.

The other one is to have order specialization that is you will be in a position to provide small lot orders easily and that would be a big plus point for the company. You could have geographic focus saying that in my geography I would be the best service provider or best product provider and you could also look at backward integration to be able to reduce your cost of production or to enhance the differentiation that you could offer.

Interestingly, the strategic prescriptions for fragmented industry are almost similar to those that are made in other industries. However, how you apply those strategic prescriptions and how you merge it with the requirements of lean facilities and lean operations and better customer service and better differentiation would hold the key for successful strategic positioning.

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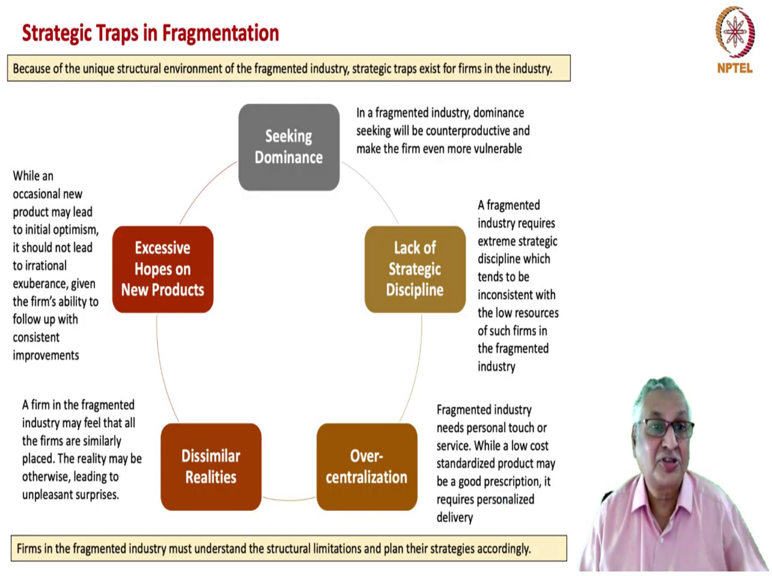

At the strategic traps in fragmentation we may say that a fragmented industry by definition is not an industry that is great. However, there would be further traps in a fragmented industry because of the unique structural environment. You may be player in a strategic manner, but you may misapply the strategy. You may try to seek dominance in a fragmented industry seeking dominance will be counterproductive and could make the firm even more vulnerable because what is there the pie is not large enough.

The single slice that is available for you is too small to adopt any of the strategies of the higher order in the fragmented industry. So, seeking dominance is generally ruled out except through (Refer Time: 29:34) Then there could be lack of strategic discipline. A fragmented industry requires extreme strategic discipline which tends to be inconsistent with the low resources that such firms have.

Therefore if you are not very poised towards lean operations if you keep ordering additional inputs, if you allow these talks to multiply then you would have in discipline in the operations and therefore, higher cost and you would be even more constrained and more vulnerable. Then over centralization we talked about lower decentralization and better understanding at a central level usually owner manager level to manage the fragmented company better.

However, we also need personal touch or service. You should not run your firm in such a manner that nobody other than you as the owner manager matters in the thing. In a restaurant industry every waiter is important, every chef is important. Therefore, you got to ensure that relationships are built at every level in a small company. While a low cost standardized product may be a good prescription it requires personalized delivery.

Your delivery agents must be able to be quite different from the delivery agents of let us say an Amazon. You should be able to have personal rapport and relationship with the household that orders your products. Then you should take care of dissimilar realities that is a firm in the fragmented industry may feel that all the firms are similarly placed. The reality may be otherwise that is just as you are trying to be more capable within a fragmented industry.

Other companies also could be trying to do that and some of them more effectively in which case that company would spring a surprise on you. In fact, you should be the company which is going to spring a surprise on that. Therefore they do not have a uniform prescription for all the players in a fragmented industry. Then the other aspect is that you could put excessive hopes on new products.

You may be thinking that ok I am today down and under in a fragmented industry, but I am developing new products. I am going to acquire new products. Therefore I will be better off. You may think of opening additional restaurants and you may think that you will be able to gain better business, but what a place here might apply there also. An occasional new product may lead to initial optimism, but it should not lead to irrational exuberance.

Many companies which have been very successful as a single location small scale firm have seen decline. Once they opened up too many locations or too many stores or too many facilities because such firms will not be having the ability to follow up in all the places with consistent improvements.

So, firms in the fragmented industry must understand the structural limitations of the industry why they are stuck in a fragmented industry and therefore, plan their strategies accordingly.

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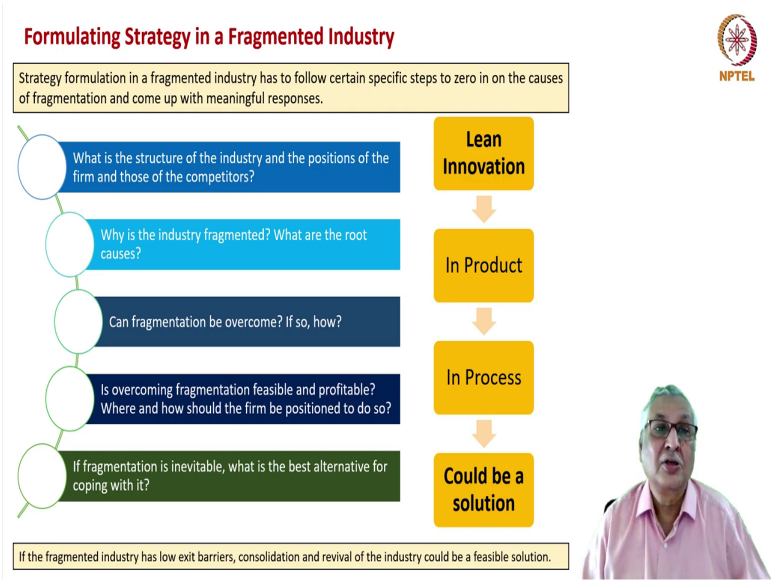

Formulating strategy in a fragmented industry is simple, but needs to be very perceptive. It has to follow certain specific steps to zero in on the causes of fragmentation and come up with meaningful responses. You must understand what is the structure of the industry and the positions of the firm and those of the competitors is the industry in the terminal stage that is there is not going to be any technological improvement.

Technological obsolescence is the key dimension of this industry and the demand for the products provided by the industry are declining or this is the factors in which case you are in the tail end of the terminal stage of the industry that you must understand. Why is the industry fragmented?

What are the root causes? Is it because of the indiscipline of the players in terms of getting in with without understanding the market or the low entry barriers or low technology barriers which is the real cause and then you try to dissect the root causes. Can fragmentation be overcome if so how? We have talked about several ways in which fragmentation can be overcome.

Is overcoming fragmentation feasible and profitable? Where and how should the firm be positioned to do so? What strategies can I adopt in a fragmented industry? And if fragmentation is inevitable what is the best alternative for coping with it? If the fragmented industry has low exit barriers, consolidation and revival of the industry could be a feasible solution.

But if you are going to stay in the business, lean innovation could be the mantra. Lean innovation in product and in process could provide cost leadership with a modicum of differentiation for you to be able to survive and probably even grow in the fragmented industry.

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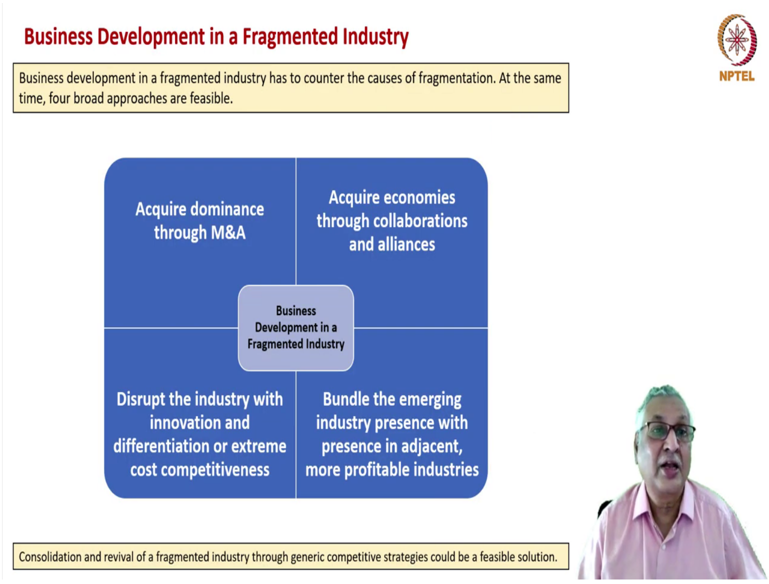

As a business developer, what are the choices you have? Let us say you are hired as a business development leader by a owner manager to give various options for the company to come up. Of course, you would study what all are the causes, what are the solutions and go through all the strategic reviews I have talked about in this lecture. But broadly, four options are available.

Acquire dominance through mergers and acquisitions. Acquire economies through collaborations and alliances. Disrupt the industry with innovation and differentiation or extreme cost competitiveness. Bundle your presence in the emerging industry with presence in adjacent more profitable industries. Amongst all of the four, acquiring economies through collaborations and alliances is a useful first step.

But in in case you have resources, you can acquire dominance through m and a, small bolt-on acquisitions which will keep expanding your presence in the marketplace. If you have deeper resources and along with that talent, you can try to disrupt the industry with innovation and differentiation. If you have superior execution capabilities and talent to manage highly commoditized product range, highly commoditized manufacturing throughput requirements, then you can achieve extreme cost competitiveness.

Again, bundling your presence in the emerging industry or another profitable strategic adjacency industry with your presence in the emerging industry is also a matter of deep finance. So, consolidation and revival of fragmented industry through generic competitive strategies is possible, is feasible and also could be techno economically viable. But it has to be applied on a case to case basis.

The owner managers, the founders and you as the strategic business developer must have alignment of approaches to be able to effectively undertake such a business development.

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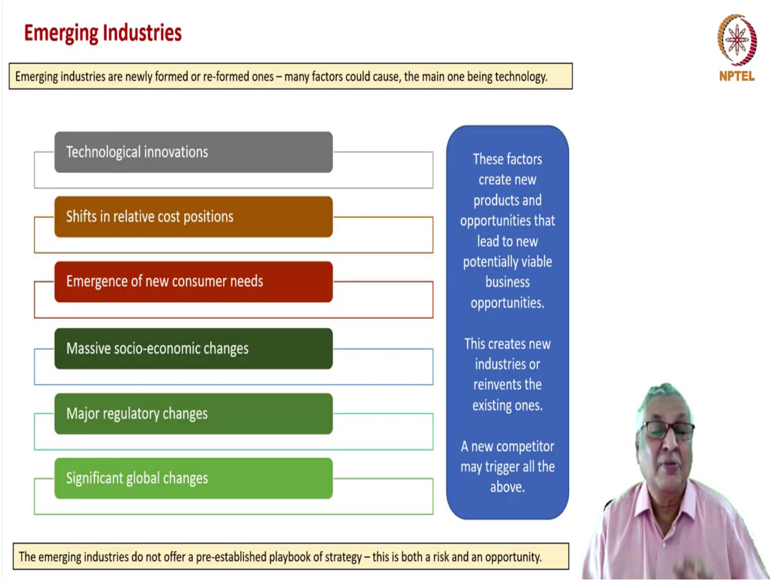

Now, let us look at emerging industries. Emerging industries are newly formed or reformed ones. Many factors could cause the emergence of new industries, but the main one is one of technology. There are several factors that are listed here, but the top of the list is technological innovation.

It is technology that drives the formation of new industries. In the previous lecture, I have given you more than 30 examples of how new technologies are driving new firms to take shape and therefore, new industries to take shape. Google has been a classic instance and the several sensor based and artificial intelligence based technologies that are coming up and leading to creation of new startups and modification of the mainstream companies is an example of how technology drives industrial formation.

The second reason for emerging industries is the shift in relative cost positions. Once upon a time, solar energy was prohibitively expensive. Therefore, it could not be an emerging industry, but in terms of the direction, it was an emerging industry. But when the solar module caused precipitously declined, that industry became very viable for replacing the established fossil fuel industry in the energy sector.

So, the shifts in relative cost positions cause the emergence of new industries. Consumer needs themselves will emerge. The requirement for online tuitions before COVID as well as during COVID has resulted in the emergence of online teaching online education as a big edu tech industry. Massive socio-economic changes. The bottom of the pyramid reduces in size and the middle portion of the pyramid increases in size. The apex is much more vocal in terms of its product requirements.

All of these things could be a result of massive urbanization and therefore, change in the structure of products or per contra, the rural sector itself could be very well positioned to accept all the products that are being offered in the urban sectors. So, massive socio-economic changes could drive emergence of new industries.

There could be major regulatory changes that are occurring. That is, you should be able to use at least 50 percent of hydrogen as the fuel for aircraft. Flying and that could be a major regulatory change and that could completely redefine the green hydrogen industry as related to the aircraft industry. There would be significant global changes including geopolitical changes.

These factors create new products and opportunities and they lead to new potentially viable business opportunities for any company to enter a new space and create a niche for itself and also start the formation of the industry around those new products and new services as well as new businesses. This approach of technology driven or environmental driven change creates new industries or reinvents the existing ones.

A new competitor who arrives into the industry with certain new capabilities could trigger all the above. The emerging industries do not offer a pre-established playbook of strategy because nothing about the emerging industry is completely settled. There were times when a particular technology was considered very novel and game changing, but nothing happened on those lines including the famous genetics approaches.

People thought that personalized medicine is the next-day's possibility. It did not happen that way. It is still work in progress. Therefore, there is a risk as well as an opportunity in the emerging industries.

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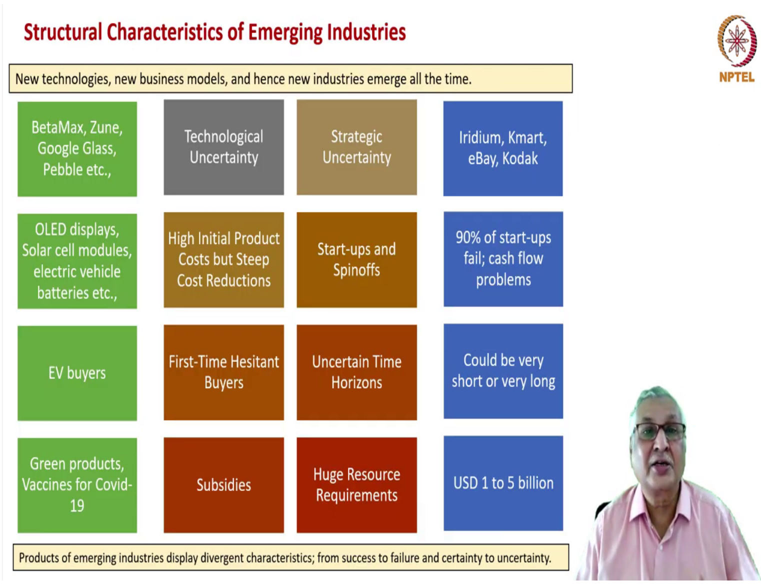

What are the structural characteristics of emerging industries? New technologies, new business models and hence new industries and they emerge all the time. There are several factors that drive such emergence. Betamax, Zune, Google Glass, Pebble. These are all the ones which did not succeed. They face technological uncertainty. They also face strategic uncertainty. We also have companies which have made their mark even through the uncertainty.

Iridium, Kmart, eBay, Kodak and different stages and manners. OLED displays, solar cell modules, electric vehicles, batteries. These are bringing new dimensions to existing industries. And they are coming with high initial product costs, but steep cost reductions and they are typically primed by startups and spin-offs. But the fact is that 90 percent of the startups in the emerging industries fail.

They suffer cash flow problems. 2021 was a year of startup funding like in no year else earlier. But today we have startup winter staring at the startup scene. Then EV buyers, that is the customers themselves are changing. First time, hesitant buyers, uncertain time horizons for adoption and acceptance of electric vehicles.

And that period could be very short or very long. Then you look at green products and revolutionary things such as vaccines for COVID-19. Subsidies will drive. Huge resource requirements will require governments to support vaccine development and the cost could be 1 to 5 billion.

So, different emerging industries have different characteristics. Some require simply deep pockets from the private sector. Some require the monolith characteristic of a public sector to support or some straight away require government funding to be able to move into the success range. Products of emerging industries display divergent characteristics from success to failure and certainly to uncertainty.

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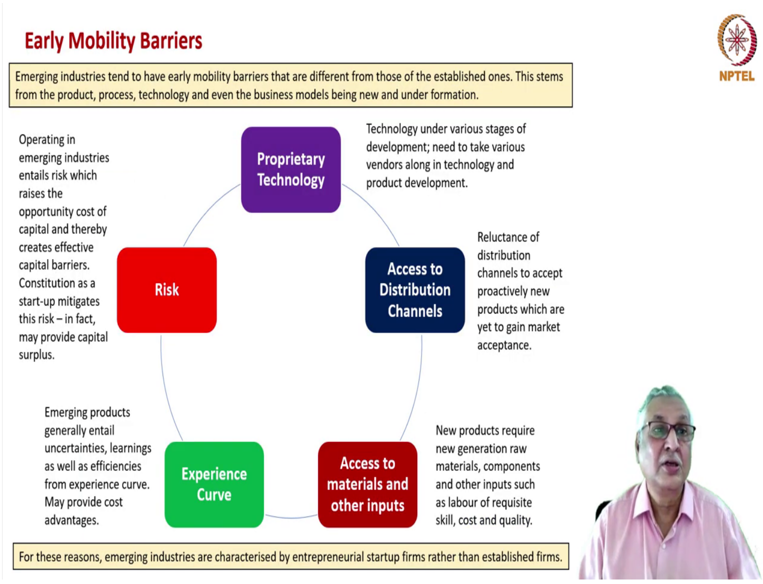

There will be early mobility barriers in any emerging industry. Emerging industries tend to have early mobility barriers that are different from those of established ones. This stems from the product, process, technology and even business models being new and under formation. So, what are these early mobility barriers? Proprietary technology.

Technology that is under various stages of development, the need to take various vendors along in technology and product development become early mobility barriers. Lack of access to distribution channel. That is you are introducing electric vehicles, but the dealership is not excited about that. Then you have problem. You will not be able to put those products.

You have brought into the market a chemical free shampoo, but the existing distribution structure should accept that product to be able to do it because distribution is all based on high volumes, low margins and therefore, high revenue as a multiplier. But if you are selling your product in small lots, there is not much hope that distribution channels will support you.

Then access to materials and other inputs. New products require new generation raw materials, components and other inputs such as labour of requisite skill, cost and quality. They may not be easily available. Even today, electric vehicle companies are studying around all over the nation for appropriate talent to develop new electric vehicles.

Experience curve. Emerging products generally entail uncertainties, learnings as well as efficiencies from experience curve. They may provide cost advantage but only after the experience comes in. That is the mobility barrier. You will need to stay in that product line, in that manufacturing line, in that business for reasonable amount of time to be able to master the art of delivering the product with a good cost advantage.

Then there is a plain and simple risk. Operating in emerging industries entails risk which raises the opportunity cost of capital and thereby creates effective capital barriers. Constitution as a startup of course, mitigates this risk and may also provide capital surplus. But when that is combined with certain other parts of strategic discipline, the net result could be negative.

Therefore, emerging industries are characterized by entrepreneurial startup firms rather than established firms that is taken for granted. But it is it must be clearly understood that even the entrepreneurial startup firms have to work within the boundaries of certain strategic discipline, certain operational discipline to be able to make a success of their entry into the emerging industry.

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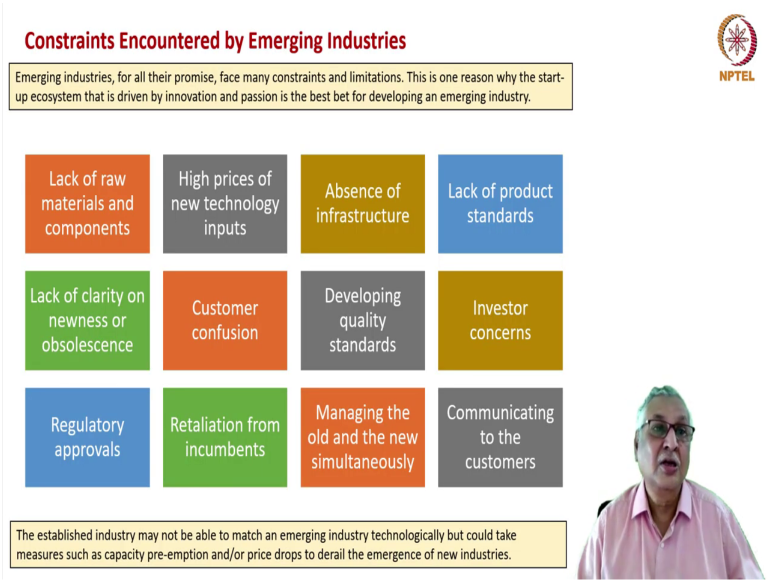

One of the constraints encountered by emerging industries, many constraints and limitations exist. That is why the startup ecosystem has to be driven by innovation and passion. So, that they can with alacrity overcome those kinds of constraints and barriers. Lack of raw materials and components first barrier, high prices of new technology inputs, absence of infrastructure, lack of product standards, lack of clarity on newness or obsolescence, confusion of the customers as to which kind of product and which kind of technology to choose.

Developing quality standards, investor concerns, regulatory approvals, retaliation from incumbents, managing the world and the new simultaneously communicating to the customers. These are all problems that are all encountered by the emerging industries. Classic case is again in the electrification of automobile industry. The industry is in fact, today two industries.

The executives, leaders and managers have to run two types of industrial paradigms simultaneously, phasing down one and phasing up the other. The established industry may not be able to match an emerging industry technologically, but could take measures such as capacity preemption and or price drops to derail the emergence of new industries.

Usually the established or incumbent industries have facilities that have been established several years ago. So, these are all like depreciated plant and machinery. It is possible for such mainstream industries to drop prices precipitously and make it difficult for new industries, new players based on new technologies and new facilities to enter. These are all the barriers that are created by the concept of entry deterring pricing which I have discussed earlier.

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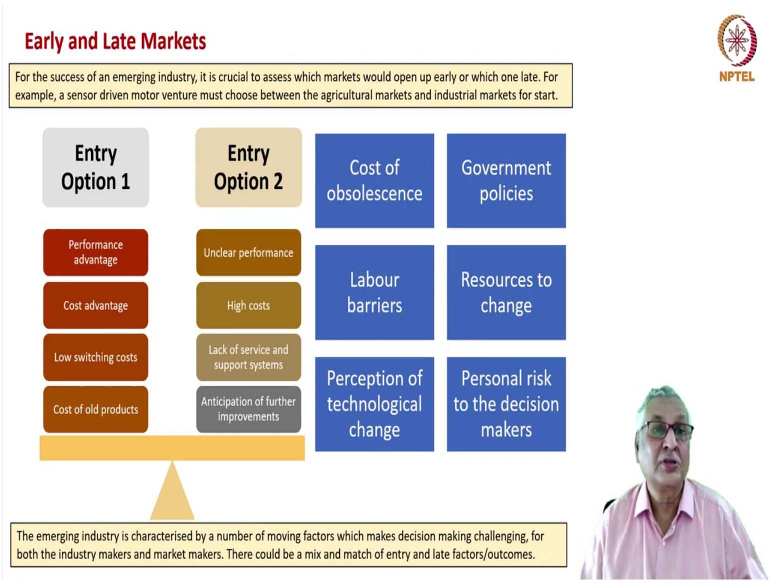

Then there are early and late markets. For the success of an emerging industry it is crucial to assess which markets would open up early or which one would open up late. For example, a sensor driven motor venture must choose between the agricultural markets and industrial markets for start. Let us say you take one option. You may have performance advantage, you may have cost advantage, you may have low switching costs, you can have cost of old products as a counter availing thing.

If you choose entry option 2, the performance could be unclear, costs would be high, there could be lack of service and support systems, there could be anticipation of further improvements. The paradox of new emerging technologies is that people will wait on hoping that the next round of technology development could be even better. So, why should I buy this technology at this time could be the customer view.

Cost of obsolescence, government policies, labour barriers, resources to change, perception of technological change, personal risk to the decision makers are all factors of early and late development of markets in the emerging industry. These are all like moving factors, these are all parts of a moving puzzle. This makes decision making for emerging industries challenging for both the industry makers and market makers.

There could be a mix and match of entry and late factors and outcomes in each emerging industry, but that would be very industry specific.

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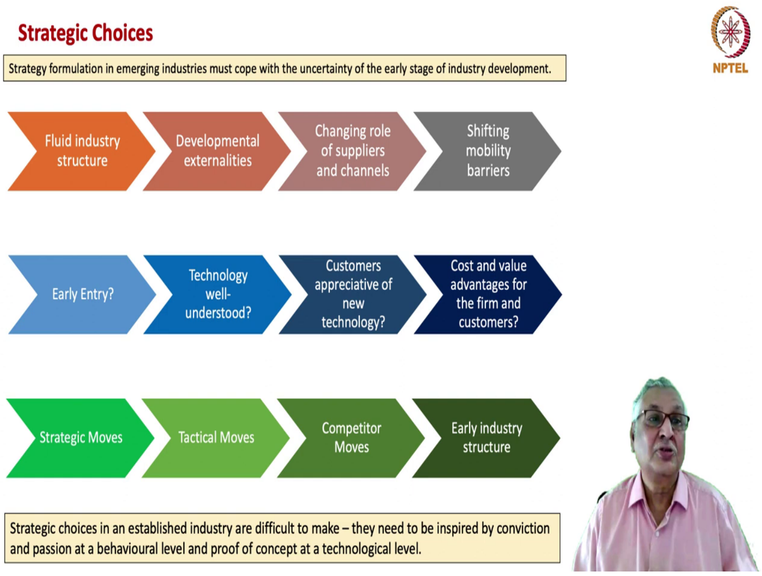

So, what are the strategic choices you have? Strategy formulation in emerging industries must cope with the uncertainty of the early stage of industry development. If you conquer the early stage of emergence of an industry, then you are set for a smooth movement going forward.

So, the what are the characteristics of the early stage fluid industry structure? Developmental externalities, you are dependent on several other factors except your own proprietary technology. Changing role of suppliers and channels, you got to groom them to come into your ecosystem. Shifting mobility barriers, this product appears feasible today, but suddenly infeasible tomorrow.

So, you cannot enter that segment. Early entry, technology is well understood, customers appreciative of new technology, cost and value advantages for the firm and customers. If these three factors are solidly supported, early entry becomes successful. And what kind of move you should have? Do you have strategic moves, tactical moves? What are the moves by the competitors and what is the emergence of early industry structure? Who are participants in that?

If the renewable energy system is marked by existing energy measures, that is one type of emerging industry structure. But if it is all full up startups, it is another kind of emerging industry structure. Because of this variety and complexity, strategic choices in an established industry are difficult to make. They need to be inspired by conviction and passion at a behavioral level and proof of concept at a technological level.

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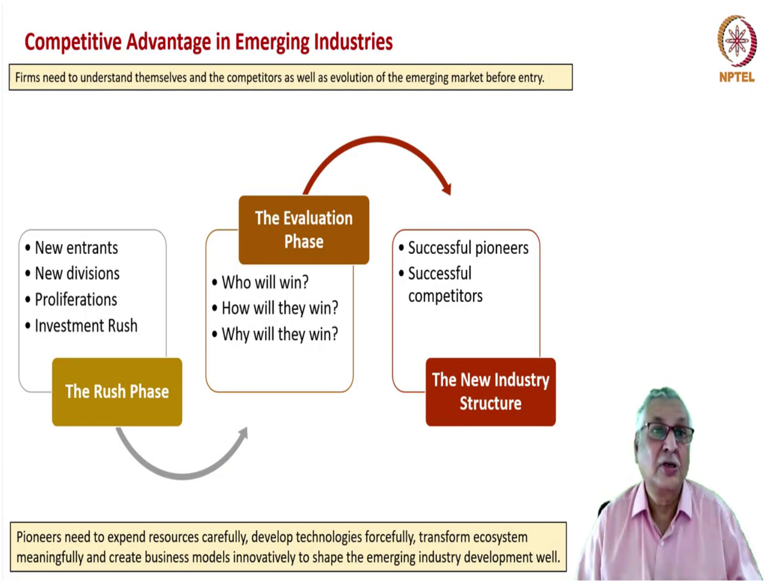

How do you get competitive advantage in emerging industries? Firms need to understand themselves and the competitors as well as evolution of the emerging market before entry. There is a rush phase when you have new entrants, new divisions, proliferations, investment rush. That is the heady phase of emergence of a new technology and the formulation of the new emerging industry structure.

Then, sanity sets in. The reality of technological proof sets in. Then the evaluation phase comes in. Who will win? How will they win? Why will they win? And finally, after these two phases, you get the new industry structure. Certain pioneers will be successful, certain competitors will be successful and some unfortunately will not be.

Pioneers need to expand resources carefully. Developed technologies forcefully, transform ecosystem meaningfully. And this is required to create business models innovatively to shape the emerging industry development in the appropriate manner.

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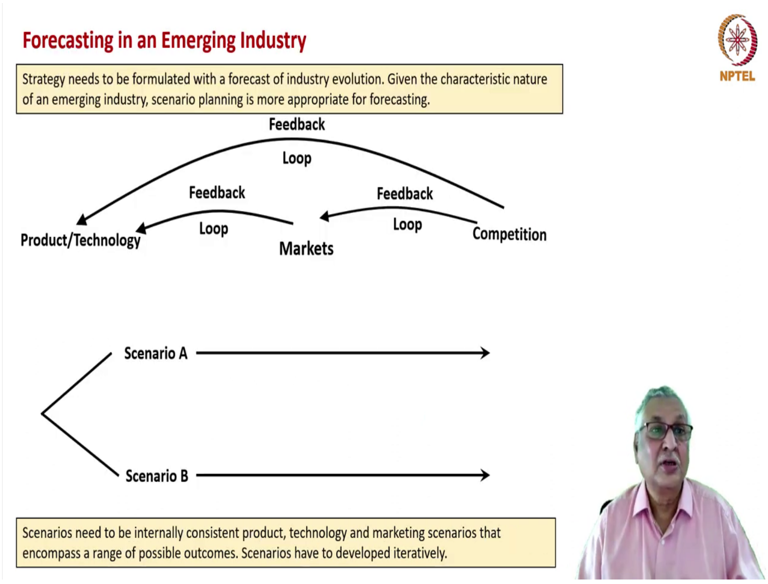

Forecasting is an important science in an emerging industry. Strategy needs to be formulated with a forecast of industry evolution. Given the characteristic nature of an emerging industry, scenario planning is more appropriate for forecasting. You have product and technology. At one end, you have markets at the other end and there is competition, which is always lurking.

And you have to have feedback loops from the competition, from the markets and from the product and technology in terms of its performance. And these feedback loops are going to help you develop different scenarios. And these scenarios need to be internally consistent product, technology and marketing scenarios that encompass a range of possible outcomes. Scenarios have to be developed iteratively.

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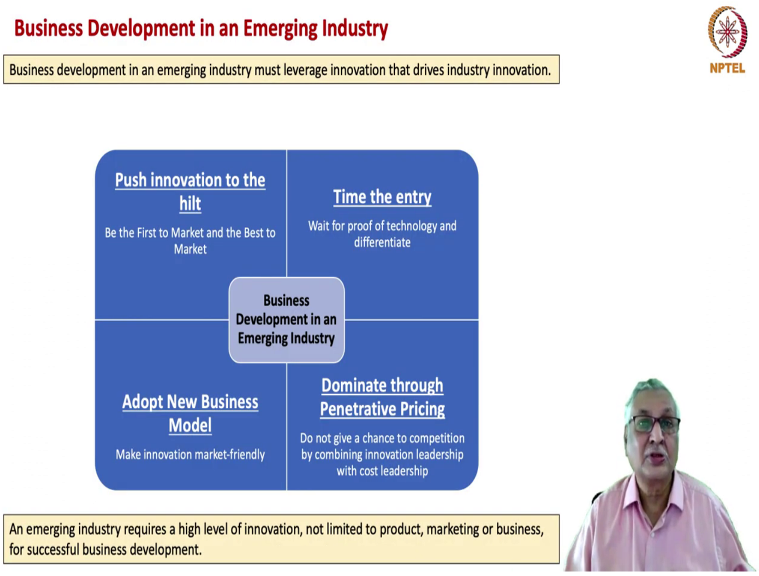

How do you do then business development in an emerging industry? It seems to be fluid all the time. The techno-economic factors cannot be predicted. But there are some ways in which you must be determined. And these are the four ways. One, push innovation to the hilt. That is be the first to market and be the best to market. You get the best technologies. You deploy them in the best possible manner.

Prove your emergence in terms of three proofs. Proof of concept, proof of product and proof of business. The second option is to time the entry. You wait for proof of technology to be done by somebody else. Then in parallel, keep differentiating yourself and enter at the right time to occupy greater space. Third one, adopt a new business model. You make your innovation market friendly. That is, it is not just a product for which people have to come to your place.

You should take the product to the doorsteps of the consumers. Normally, innovators do not do that. If you are an innovator who takes the product to the doorsteps of consumers, then you are going to have a new business model supplementing your new technology. Or simply dominate through penetrative pricing. You do not give a chance to competition by combining your innovation leadership with cost leadership. You do something which is in the nature of emerging industry.

The first preference is to price yourself high. So, that you derive all the benefits. And you cover the costs of R and D and also develop resources for the future R and D. On the other hand, you may say that I will ensure that my innovation is the one and the only dominant innovation. Therefore, you adopt penetrative pricing and do not give a chance to competition. When Google made the search completely free, it is in a way domination through zero pricing.

But it has proved itself as the best strategy possible for Google because it provided billions of people relationships for the search engine. Therefore, business development in an emerging industry requires you to be technologically savvy, market savvy and also business savvy.

When you are positioned yourself in these three aspects effectively, strategically as well as tactically, you are bound to have very good business development in an emerging industry. With this, we come to the end of this lecture.

Thank you very much for your kind attention.