Organisation of Engineering Systems and Human Resources Management
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Module - A
Basics of Organizations and Human Resources Management
Lecture - 6
Concerns of Organizing Engineering Business and Systems (Contd.)

We are now at the third and the final component of the topic, concerns of organizing engineering business and systems. And I am going to talk to you about the managerial issues, in telecom engineering business. One of the driving characteristics of telecom engineering business is, of course mergers and acquisitions.

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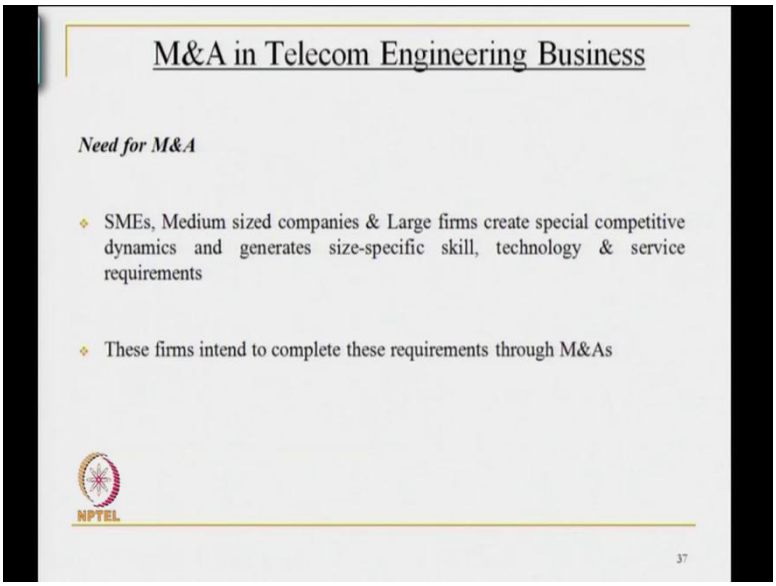

The need for merger and acquisition is large, and therefore you will find out that the situation is continuously in a state of flux; be it SME's, or be it medium sized companies or large firms, they all create special competitive dynamics, and generate size specific skills. I would like to draw your attention to this phrase, size specific skills. There is a mistaken notion in certain circles, that a movement from large to medium and medium to small, is really a factor of downscaling, the size specific skill; it is not true. Large firms, medium sized firms, small firms they all require different versions of skill domains. The kind of marketing, which is needed in the SME, is not the same as the kind of marketing, which is

needed in the large scale organization, for the simple reason that the large scale can afford a significant investment in advertisement, the small scale cannot. Large scale firms can have super specialization, where you have a person who just takes care of recruitment and selection in the HR area.

A small firm will not be able to have a person just dedicated to recruitment, he will have to do many other things besides, and therefore, there is need for multi skilling and many examples can be given. But the important thing to register here is, that there are size specific skills required, just as there are technology and service requirements. The kind of technology, which one mobile users may not be the same, as the kind of technology another mobile users, and this is not to the best place to get into the new answers of GSM technologies, and their technologies and whatever else, but take it from me technology and service requirements can vary. These firms intend to complete these requirements, through mergers and acquisitions. Therefore, by definitions in the telecom sector of engineering business, the principle of merger and acquisitions is little more practiced at a very many other places.

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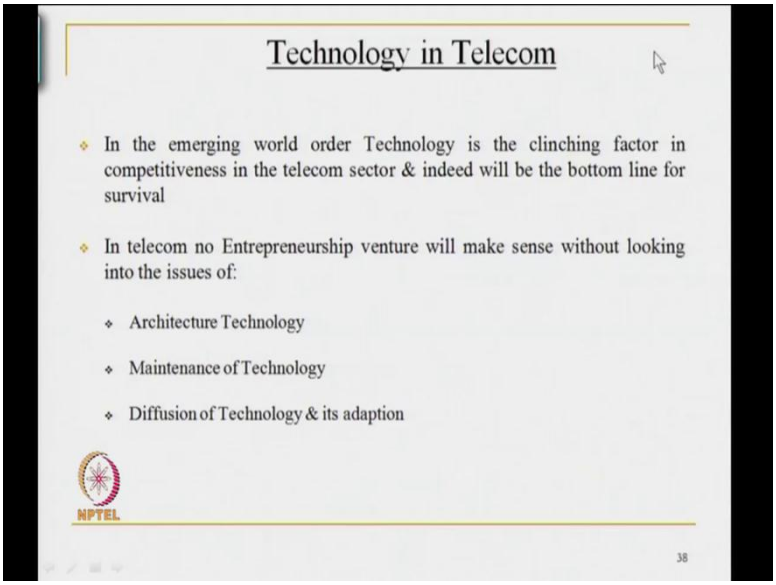

The issue of technology in telecom has several levels, in the mean emerging technology is the clinching factor in competitiveness in telecom sector, and indeed will be the bottom line for survival. In telecom, no entrepreneurship venture will make sense without looking into the architecture of technology, the maintenance of technology, and the diffusion of

technology and its adaptions. I would like to draw your attention specifically to these three-dimensions, because they are very often overlooked, and it's not realized that the architecture of technology very often determines the competitive behavior of the firm. Therefore, the choice of the technology, and the kind of architecture it has, is important. The maintenance of technology is not such a remote factor, but diffusion of technology and its adaptation, takes people little while of time to understand.

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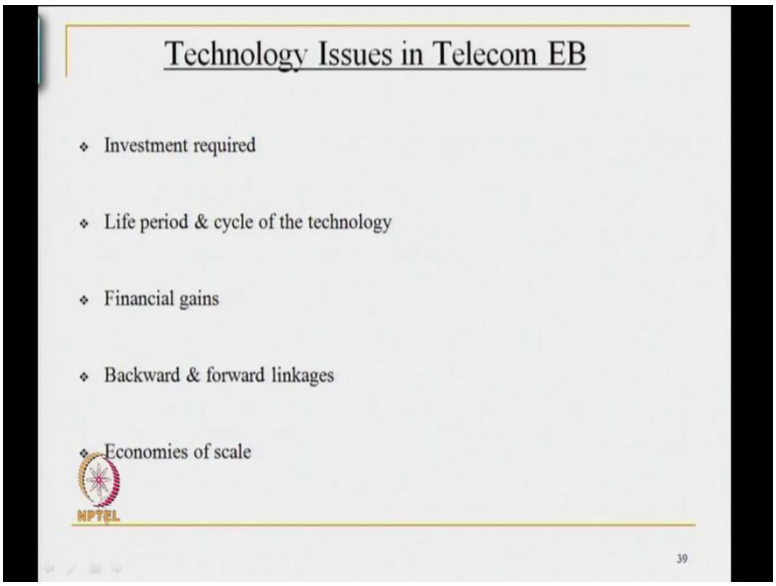

The technology issues in entrepreneur in engineering business as noted earlier, has to do with the kind of investment climate and investment required. Therefore, you really need an investment specialist, who understands technology, who has a proper understanding of the business environment around the firm, who alone can advise you into the investments required. Now this is not the straight forward finance manager's job. Finance is an important and a significant area of management, however there are shades and shades of financial operations, and it is important to register, that investment in telecom requires continuous monitoring, and the ability to accelerate or decelerate. The life period and cycle of technology itself is variable, and no investment decision can possibly be taken with a level of confidence, without having understood the life period and the cycle of technology.

The financial gains which come from this kind of investment, will have to be seen in technological terms, and the kind of redeployment of financial gains in the newer form of technology for further financial gains, is a self-feeding cycle. If the story concluded there it

would be a relief, but it does not, there is a cyclical character between investment, and the architecture of technology. There is the up scalability factor which affects investment, but then just as important is the backward and the forward linkage of the technology. We have recognized the sub segmentation of telecom, and the compatibility, and integration of everything from switching to field engineering, becomes very important in the understanding of technological growth, in engineering business, which touches telecom, therefore I would like to draw your attention to the backward and forward linkages of technology.

Then of course, there are economies of scale. The economies of scale are very often determined by the regulatory policies of the governor's process. The regulatory policies often are taken in an informed manner, but sometimes when they not taken in an informed manner, they can cause havoc to the growth of the industry, because the technology is not understood. Be the implications of the kind of economies of scale with are not tributed to that kind of technology, is not always clear to the players, therefore, the result shape up, and perhaps most significantly, the pricing and the costing of technology, does not have antecedents to create patterns which can be drawn upon. And the spectrum issue at all the furor which it caused, is merely one example of what can happen in telecom engineering business.

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The factors which affects growth of the sector, and the engineering business there in, have of course global elements, but let me draw your attention to some of the indigenous effort in technology development, which is important to understand how there is a mix, and co existence of say, at times contradictory concerns. Technology development in telecom engineering business, does innovatively require an indigenous effort, because acquisition of any technology can take place in the following ways, technology import related to foreign investment, technology import by the Indian industry, indigenous R and D effort, contemporary purchasable. Now if you look at these four discrete concerns, then you will be able to figure out, how indigenous effort in technology development, is essential to the growth of telecom engineering business.

I have did some effort to highlight it, because generally people are wise about it, but often there is an effort to be glimped, and adopt a reductionist approach. If you adopt a reductionist approach, then you have a problem at hand. The problem is, you may start believing in truisms, like you do not rediscover a wheel. Now, the slogan owes its success, as much to its being the half truth, as the fact that it is so simple to pedal. The fact is no two wheels are of the same size, and when it comes to technology no two wheels are made out of the same material. And when you start talking the size and material and maintenance, the indigenous dimensions clearly starts effecting, the technological component. Therefore, even while talking of telecom engineering business as an illustration, of how engineering business principles operate. I find it necessary to draw your attention to what I have labeled here, indigenous factor in technology development.

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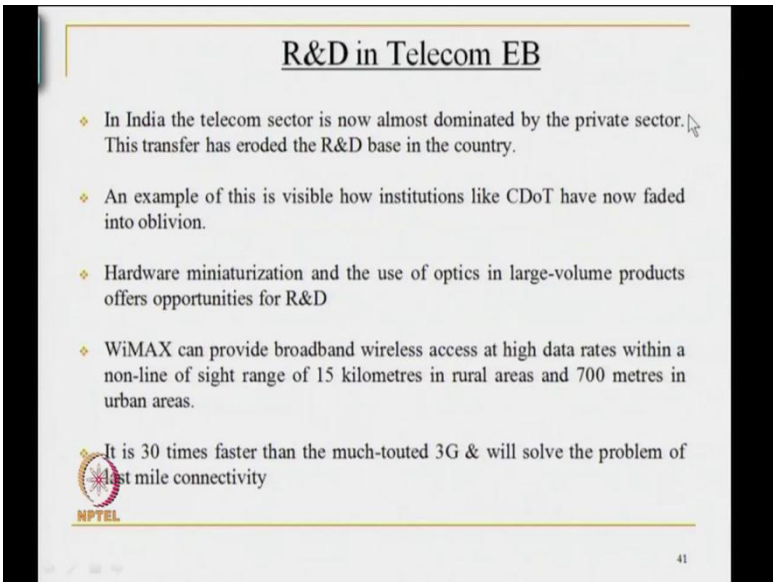

That helps us to take an easy step towards R and D in telecom engineering business, because you cannot have indigenous efforts in technology development, without R and D in telecom engineering business. So, by definition, there are areas of engineering business, where R and D are an integral part of the entire socio technical process, or the business of engineering, being port to productive use. In India the telecom sector is now almost dominated by the private sector, this transfer has eroded, the R and D based in the country.

The relative views on public sector, there are a lot of emotions which are generated on the public sector, but many of its strength need repetition, and need underscoring. If you look at the nature of operation of the public sector, you will find that almost to the man. The qualifications of recruitment in the public sector, had far more stringently operated. This is not a fairy judgment; this is a statement of facts. But then something happens, and the business dimension of the public sector does not flourish as prominently, in certain cases as the business dimension of the public sector.

Now this is not a debate I want to open it here, what I wish you to realize, is that so far as telecom engineering business is concerned, at least in India the R and D base was much larger, when the public sector was in dominance than it is today. ITI had a significant wing of R and D attached to it, which almost grew parallerly to the actual production operations. There was a technology operation, and it is there in some incarnation today in the Kurshid Lal Bhawan, set up in Delhi. What one finds however is, that with the coming enough large

number of foreign players, the R and D base in that sector has tended to receive. The example of this is the visible, is visible how the institutions like CDoT, have now faded into oblivion, I would like to believe it's not true, because there is an attempt to revise CDoT, and my own feeling is that CDoT is bound to have better days progressively, because the need to have an R and D based in the country is only bound to grow.

The recent havoc in the Uttarakhand with reference to the kind of disruption which has taken place, because of delouse, because of landslides, have showed the utmost urgency to have indigenous R and D in telecommunications, to meet the communication needs of such disastrous situations, and there is no guaranty that the Uttarakhand experience will not be repeated, in the other areas, may be triggered off by different factors.

So, the need to have indigenous R and D in telecom, is at least my way of thinking axiomatic, but that somehow recedes into a background, in the kind of drumming up, which a lot of non Indian industries are able to do, and we need to create balance around it. Hardware miniaturization and the use of optics in large volume products, offers opportunities for R and D, and again CDoT is quickly growing into this area. WIMAX can provide broadband wireless access, at high data rates, within an non line of sight ranges of 15 kilometers in rural areas, and 700 meters in urban areas, this needs Indian situations. It is 30 times faster than the much routed 3 G, and will solve the problem of last mile connectivity.

So, one has to look at R and D in the telecom engineering business, as an integral part of the growth of the sector, but then the significance that the R and D has may not be so assertive or inherent as in some of the other sectors, but then this is not the place to get into an understanding or a discussion, of the intra sectoral profiles of R and D. I have brought the point up to nearly to illustrate the view the nature of engineering business, the concerns of engineering business, and how indigenous R and D such an integral part, of the growth of that kind of engineering business, and like many things India has a rich past, and so far as telecom is concerned, an organization like CDoT, is very much needed, and should be able to go from strength to strength. However, I would not like to convey the impression that R and D in multinational companies, or non Indian companies is low. It is not low it may not be rooted in India, but they do their own R and D, and you should be aware of that.

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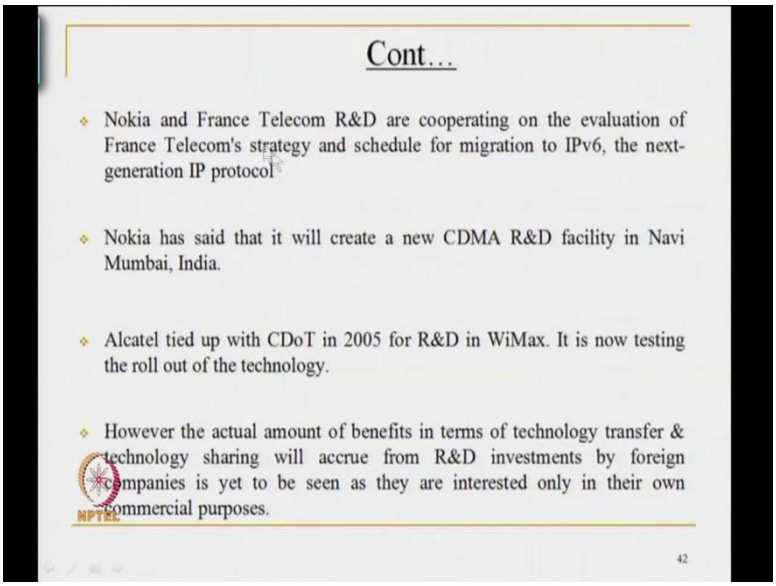

Nokia and France telecom industry are cooperating on the evaluation of France telecom strategy, and Scheduled for migration to IPV 6, the next generation IP protocol. Nokia has said that it will create a new CDMA R and D facility in Navi Mumbai India. Now I find it necessary to underscore this, because R and D itself acquires a certain profile and a certain character in engineering business, and the larger point is to be made is, there are indigenous capabilities to be developed, there are exogenous capabilities which will continue growing, there will be technology transfer, but R and D competencies indigenous to a country must continue to reinforce, and must continue to grow. Alkatel typically tied up with CDoT in 2005 for R and D and WIMAX, it is doubt testing the roll out of the technology. So, it is not an either or relationship it can be a mix too.

However, the actual amount of benefits in terms of technology transfer and technology sharing, will accrue from R and D investments by foreign companies, and that is yet to be seen as they are seemed to be interested, by enlarge their own commercial purpose which cannot be grudged, but then just as cant be grudged. A view from the Indian perspective on these issues also cannot be grudged.

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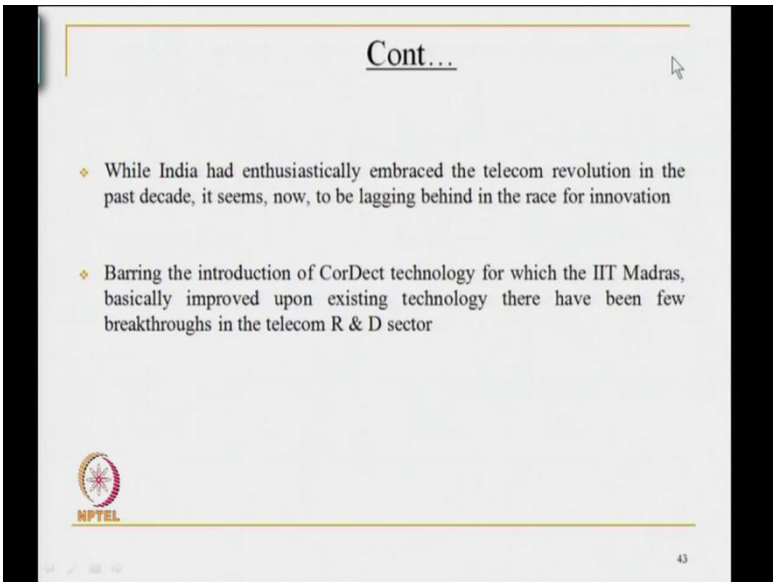

While India has enthusiastically embraced the telecom revolution in the past decade, it seems now to be lagging behind in the race for innovation, and this is a gap which government is aware, is planning to do something about it, something has been done, but the whole process needs to be speeded up in a manner, which creates an innovation culture in R and D, so far as engineering business is concerned.

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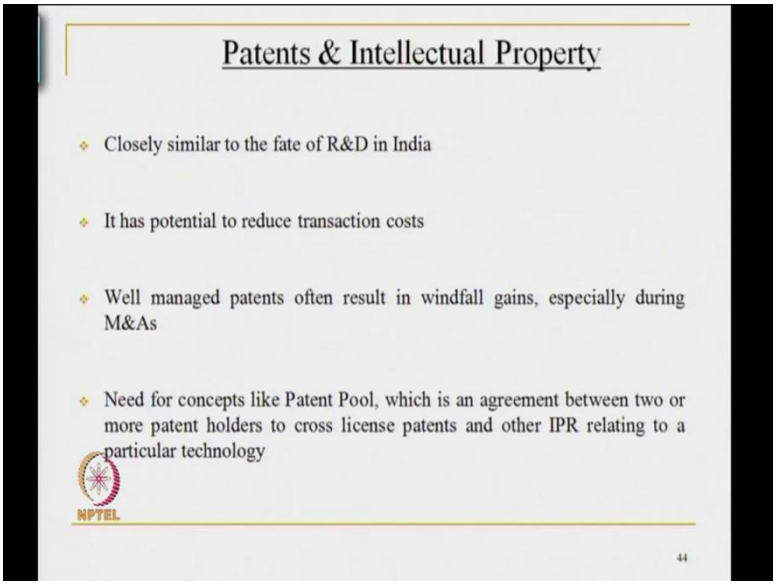

Now that brings us to the study of patents and intellectual property rights in telecom. This is closely similar to the fate of R and D in India. It has a potential to reduce transaction costs,

and the more we focus on it the better it is. Well managed patents often results often result in windfall gains, especially during merger and acquisition. However, the number of patents being filed, do not seem to be large, or at least not as large as a requirement is. Therefore, there is a need for concepts like patent pool, which is an agreement between two or more patent holders, to cross license patents and other IPR related to a particular technology.

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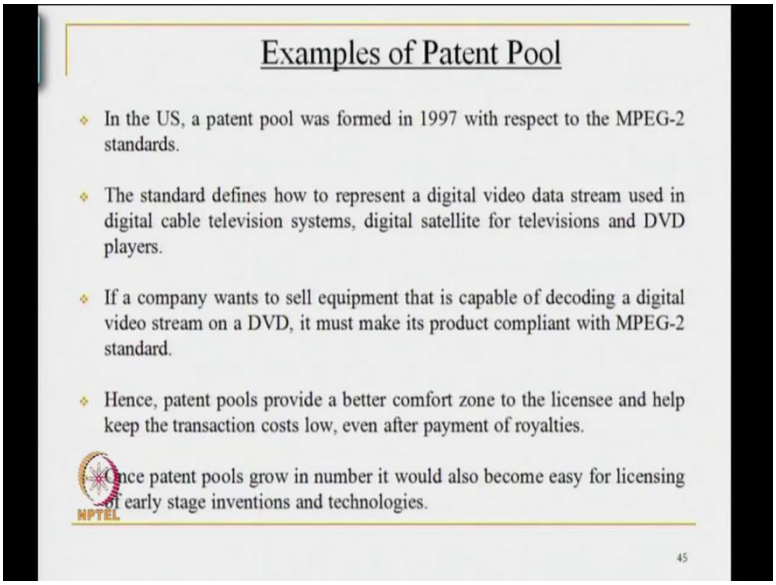

A look at the patent pool concept may be useful, in US a patent pool was formed in nineteen ninety seven with respect to the MPEG 2 standards. The standard defines how to represent a digital video data stream, used in digital cable television systems, digital satellite for televisions, and DVD players. If a company wants to sell equipment; that is capable of decoding a digital video stream on a DVD, it must make its product complaint with MPEG 2 standard. Hence patent pools provide a better comfort zone to the license, and help keep the transaction costs low, even after payment of royalties, as a strategic thrust this needs to be encouraged.

Once patent pool grows in number, it would also become easy for licensing of early stage investment and technologies, what is being recommended therefore, is a policy perspective from telecom, which puts all this together in a manner, which makes technological growth and operations not only easier, but more consistent with the nationally cherished dreams, of covering whole remote areas, in a communication network. Using communication networks

as an instrument of equity and distributive prosperity, and adding value to the business as it grows. Patent pool will figure prominently in such a scheme of things.

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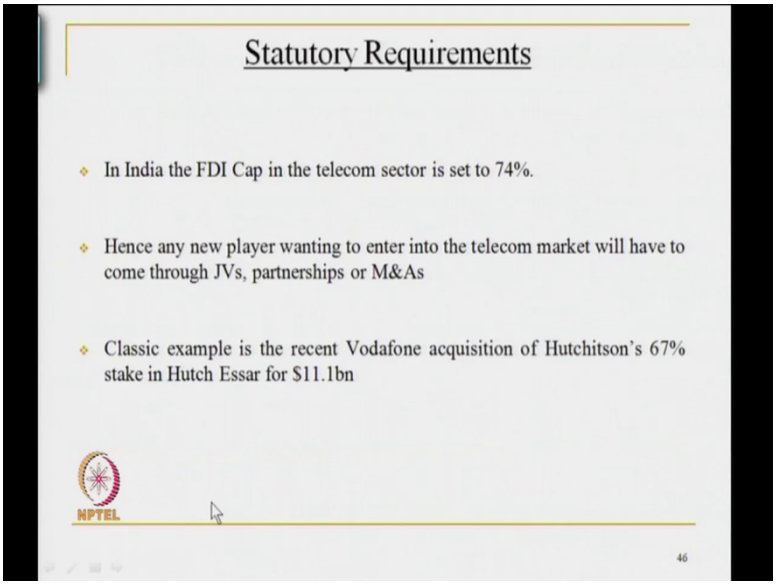

The statutory requirements of the FDI cap in telecom sector, was at one stage set to be 74 percent, and at another stage, there has been talk of reducing this cap and this debate will go on, for our purposes however, if any new player wanting to enter into telecom market, has to be considered, it has to come through the JVs, partnerships, mergers and acquisition, and this according to some people needs rethought, classic example is the recent video phone acquisition of Hutchinson's 67 percent stick, in hutch SR, for dollars 11.1 billion, and I do not think we have heard last of this resonating acquisition, but that is a debate which I would not like to get into here, but shows how at a national policy level, mergers and acquisition need to be handled with high degree of business of appreciation concerns.

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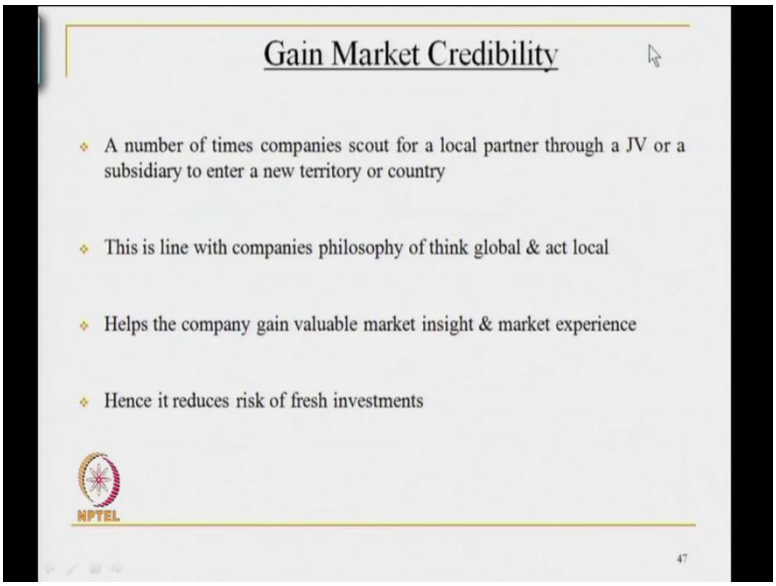

Of course, the attempt should be in all efforts to gain market credibility. A number of times company is scout for a local partnership through a JV, or a subsidiary to enter a new territory or country. If the indigenous partner does not have a matching market profile, and a matching understanding of how it works, then one can have the problem at hand, and above all one needs to have manage matching managerial styles. If all this is not thoughtful during mergers and acquisition, then there is a huge opportunity loss, and there are jerks and jolts which can affect the profitability of the joint venture. This is in line with the company's philosophy of think global and act local. And ultimately it helps the company gain value market, insights, valuable insights and market experience. Take the case of now nonexistent collaboration between Hero and Honda, and so far as the two wheelers are concerned.

The technology came from Honda, the marketing done was by the Hero group, and together it seemed to be amendment situation, but for reasons which may not be necessarily be relevant here for a the discussion. It was obvious that both the parties agreed, that it was best to part, is Hero's decided to have a separate technology, and Honda decided to have its own marketing in India. So, both of them decided to get into the respective areas, which earlier had put aside for the partner. The proposition is, mergers and acquisitions have their own logic, and they cannot be made slogans, because slogans do not necessarily, lend themselves to managerial solutions. This will be a major factor of analysis of risk framework, and taking fresh investment decisions.

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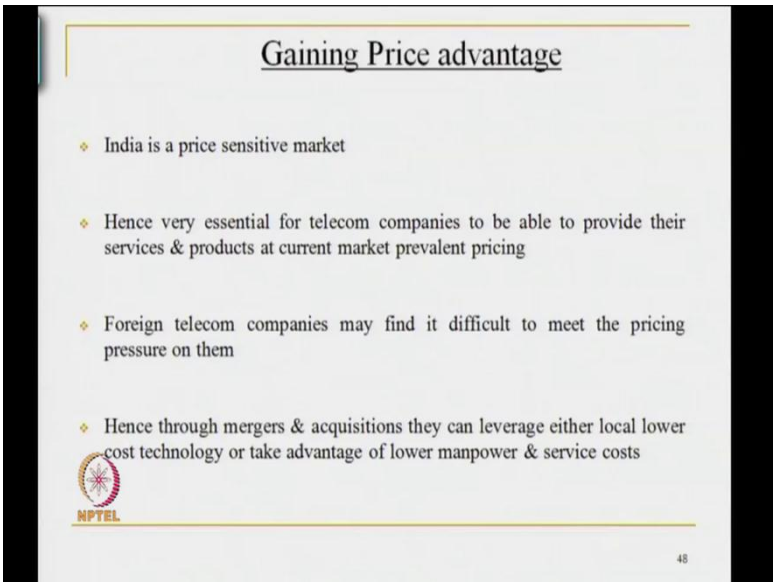

Gaining price advantage is an important managerial principle in management of engineering businesses. Not that, it's not an argument in other kind of businesses, but in engineering business it is particularly significant. This is so because India is a price sensitive market. It is very essential for telecom companies, to be able to provide their services and products, at a current market prevalent price, and that is the cache. As we look at the scene today, the a receding pricing principles of telecom services, have started affecting the bottom line of running telecom operations, and yet it is inherent in the situation, not only because of the price sensitivity of the market, but also because the nature of technological growth.

Hence foreign companies may find it difficult to meet the pricing pressure on them, and which way the direction will grow, so far as in telecom engineering business is concerned; only time will tell. The larger principle to which I seek draw your attention, is to underscore, that engineering business has a character of its own, which responds to many no engineering factors, and that has to be understood in a managerial frame. Hence, mergers and acquisitions, they can leverage either local, lower cost technology, or take advantage of lower manpower service costs, or they can for go one, for the other, there are any number of permutations and combinations possible, and so long as you are willing to use the permutations and combinations, it seems something simple to understand, and easy to comprehend the complicated to operate.

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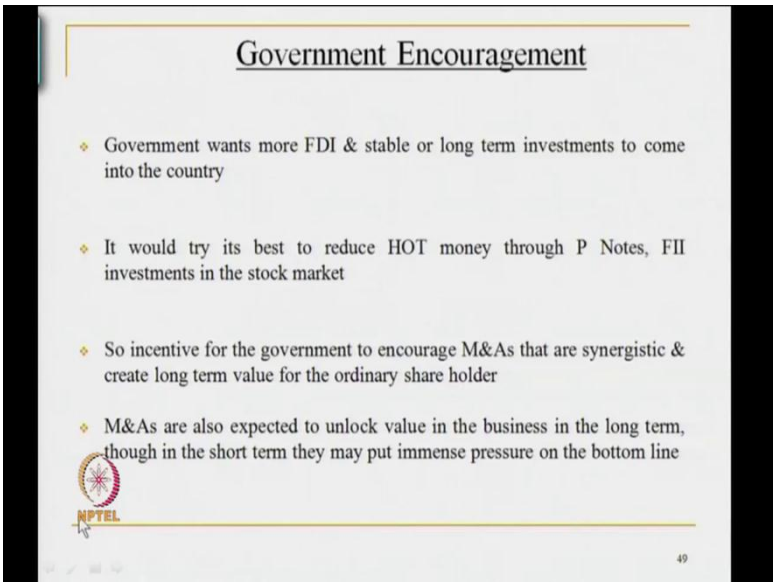

In this context a reference to the role of government is important. Many statements of significant political executives have outlined, the need for greater FDI, some will recall the much coated statement of the prime minister, that money does not grow on trees, and therefore, FDI essential, or the views of finance minister on foreign direct investment, but there are externalities needed for stable long term investment to come in. And even if it does to say that FDI will be able to solve all investment issues would be only a statement of the naïve. Therefore, it is essential to try ones best to reduce hot money, through p notes. For an investment in stock markets will also therefore, become effectors.

The policy fine tuning, where promising notes are concerned, or investments in stock markets is concerned, is really a large issue and we may not find it useful to get into that level of debate or discussion here, but it is important to remind ourselves, that mergers and acquisition itself requires strong governmental support to be able survive, and synergistically one has to create long term value, for the ordinary share holder, for merger and acquisition to survive.

Merger and acquisitions are also expected to unlock value in the business in the long term, though in the short term, they may put immense pressure on the bottom line. Hence one more concern which has to be flagged. The holding capacity of the firm, will be a holding capacity of the business, will be a factor of the appreciation, which the ordinary share holder or not so ordinary share holder has an out the business environment and its stability

in India. Now all these are the concerns of engineering business, and where it is important for an engineering to get a field of what engineering business is all about, in its managerial dimension.

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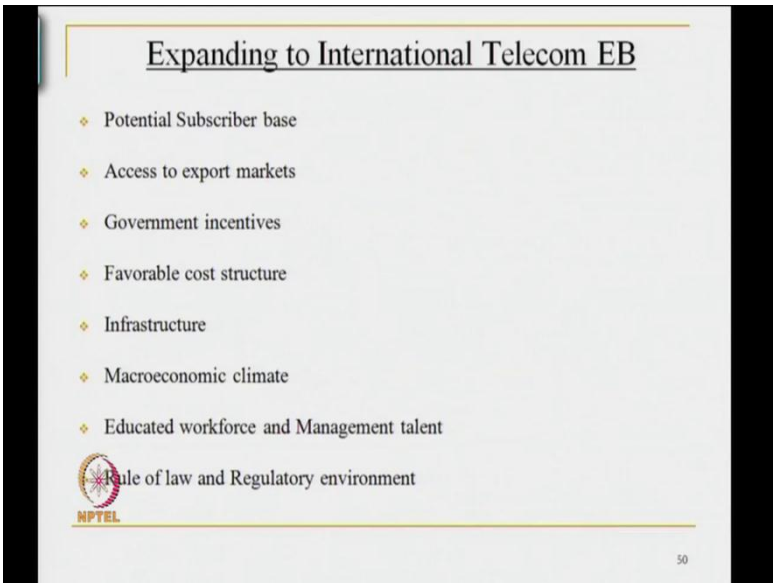

If one expands ones focus of concern, to international telecom of engineering business, then there are certain considerations, which again need to be considered very closely. There is the potential subscriber base, one needs to have at access to export markets. The government incentives, (()) favorable cost structure becomes available, the nature of infrastructure and its sustainability is critical, macroeconomic climate becomes a factor which has an interplay with the entrepreneur growth, educated workforce and management talent, becomes much in demand, and the role of law and regulatory environment becomes critical.

You find presented on the screen, eight dimensions of telecom engineering business, which has to do with human factors in engineering, which has to do with users, which has to do with access to the markets, and which has to do with the financial policies of the government, and in fact, it is one of the pervasive policy platforms, which has a financial dimension, the marketing dimension, a consumer direction, is a super structure based on a kind of infrastructure, and has an interplay with the microeconomic climate. It is not possible to assign weightages of to all this, in a dynamic situation, be that is it may, it is

essential to understand how this becomes significant, or how this becomes a factor, in carving out a business space for engineering.

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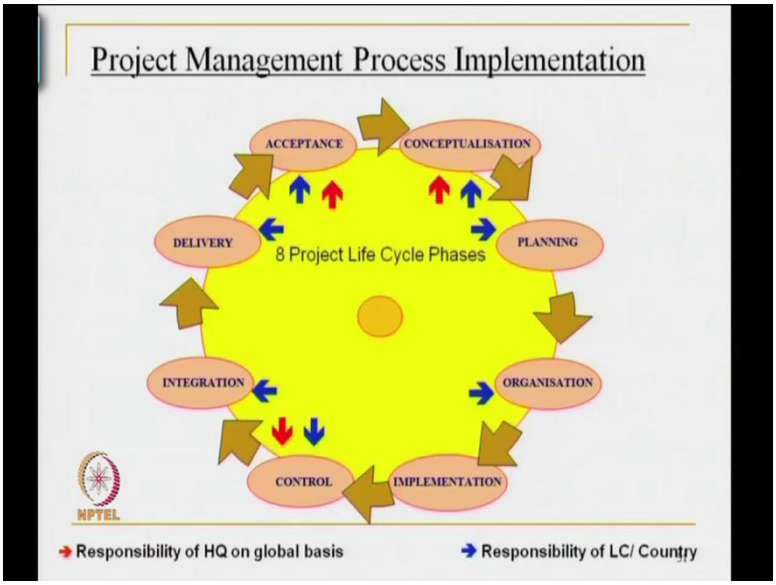

I suggest you take a careful look at the following phases, of a project, life cycle, to understand how project management, process implementation, can be a possible root to integrating these dimensions. There is conceptualization, there is planning, there is organization, there is implementation, there is control there is integration, there is delivery, there is acceptance, and generally in a scholastic mode, eight project life cycle phases are recognized.

The responsibility of the head quarters on global basis, is therefore, together with the responsibility of the local company to on the system. The red arrows shown to you the responsibility of head quarters, on a global basis, and the blue arrows shows to you the responsibility of local company, or the country in which the operation actually takes place. Hence, there is a scope for joint ventures between international companies and local companies, which are not mutually exclusive, but then the key question remains, what works where, and what is needed in which segment of telecom engineering business.

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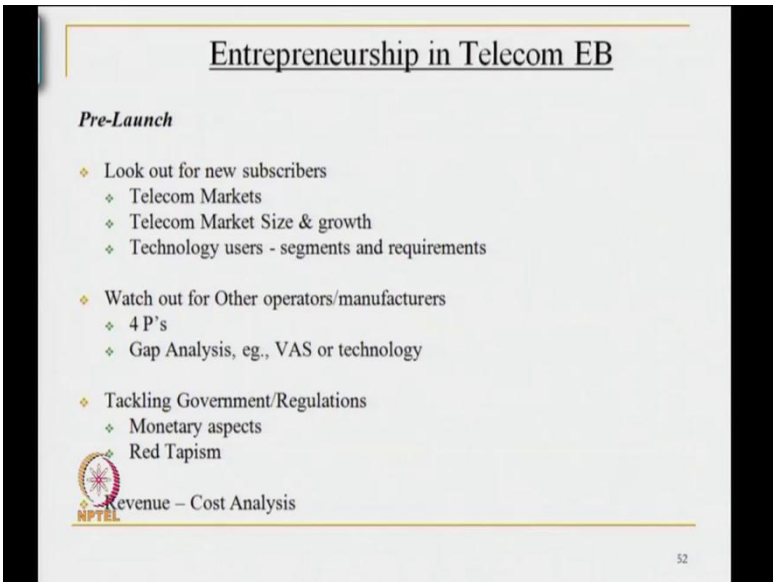

I would like to conclude this discussion, with a brief reference to entrepreneurship in telecom engineering business, because ultimately innovation or creativity, or its manifestations, do acquire an entrepreneurial character. And if you look at entrepreneurial character, as an approach to handling engineering business, then the picture that the following emerges. There is the pre launch stage, where you look out for new subscribers, in the case of telecom engineering business it comes in the form of telecom markets. Telecom markets will have their own size and growth, and the telecom users will have their own segments and requirements. Then one has to watch out for other operators and manufacturers. One has to do a gap analysis; for example, VS or technology, one has to get adapt to tackling government and regulations, the monitory aspects, and indeed were need where it take, there are revenues; there is a need for revenues and a cost analysis.

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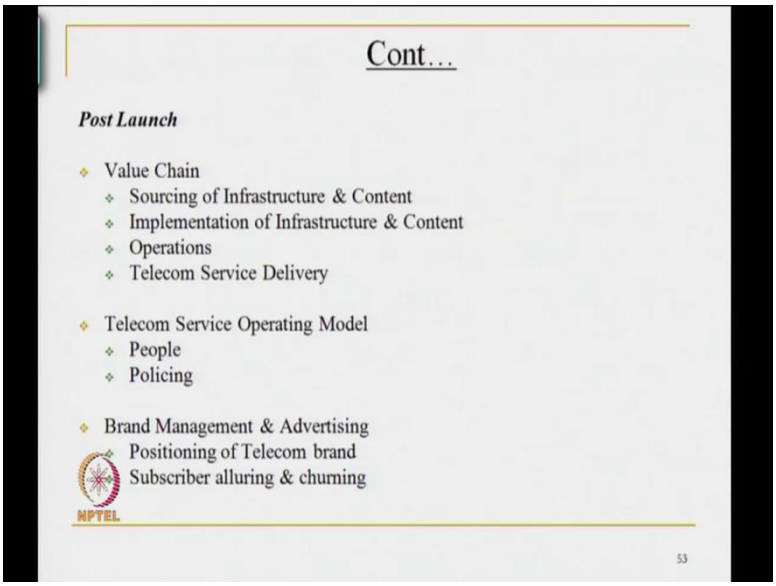

In the post launch stage, there is a value chain, this value chain requires sourcing and infrastructure and content, implementation of infrastructure and content, a look at operations, telecom service delivery. Let me walk out through this value chain quickly again just in case you have lost me in the first narration; sourcing of infrastructure and content, implementation of infrastructure and content, operations telecom service delivery. Then two things have to be handled telecom service operating model, and brand management and advertising.

So far as telecom service operating model is concerned, one will have to look at people and policing, in terms of watching what is happening to the regulatory framework. So, as brand management and advertising is concerned, positioning of the telecom brand as subscriber alluring and churning, will have to be factored in and what people are beginning to discover is, very often advertising can become a nuisance on telecom instruments and that is another story, which can perhaps be taken up on another day.

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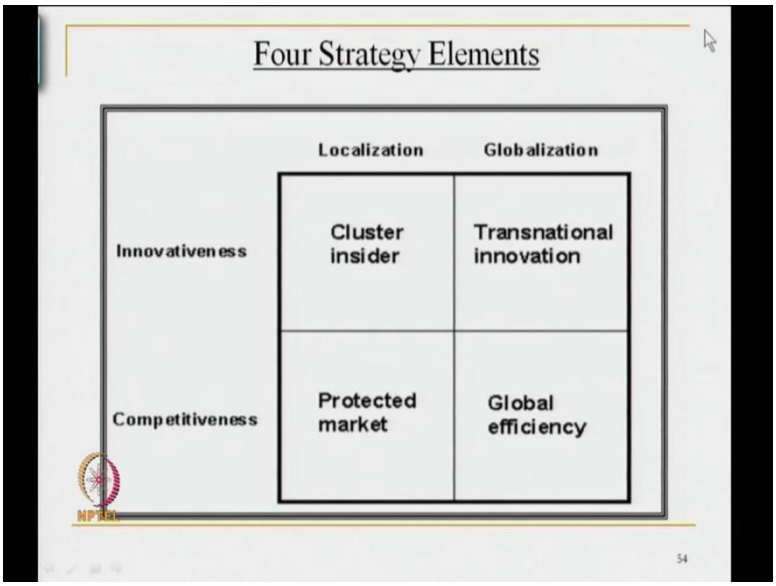

Four Strategy elements therefore, can be summed up in the following manner, there is innovativeness, there is competitiveness, there is there is localization, and there is Globalization. So, if you look at y axis being broken up into innovativeness and competitiveness, and the x axis which is the local and the global, we have the cluster insider, we have protected markets as options available on localization, as an element of innovativeness and competitiveness. It can then move on to transnational innovation, if Globalization is put together with innovativeness. What if Globalization is put together with competitiveness, it can result into global efficiency.

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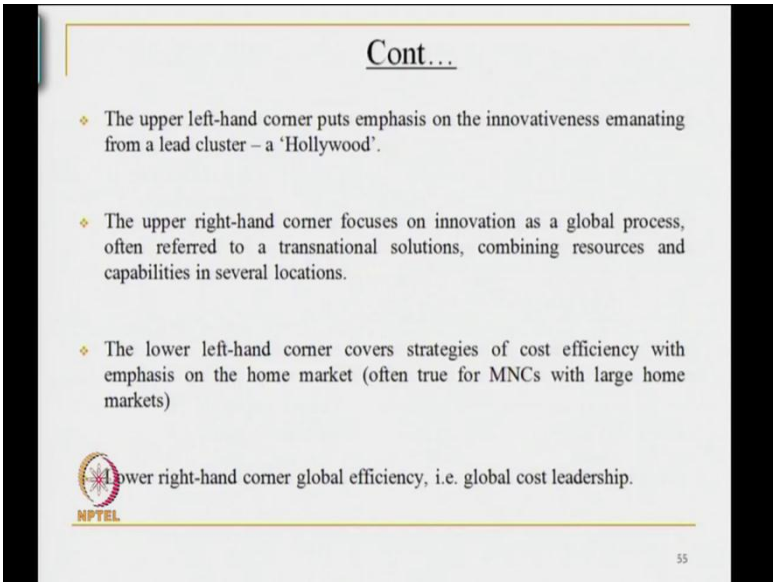

The upper left hand corner of the diagram which I just showed you, puts emphasis on the innovativeness in emanating from lead cluster, and I show to you again the diagram, so that you know how to correlate my remarks with that. So, as I was saying that the upper left hand corner puts emphasis on the innovativeness, emanating from a lead cluster. The upper right hand corner focuses on innovativeness, as a global process, often referred to a transnational solutions, combining resources and capabilities in several locations; the upper left hand corner. The lower left hand corner covers strategies of cost efficiencies with emphasis on home market, often true for MNCs and large home markets. So, back again to the diagram to understand the lower left hand corner strategies, and we go on to the lower right hand corner global efficiency; that is the global cost leadership.