

**Innovation, Business Models and Entrepreneurship**  
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**Lecture - 28**  
**Innovation: Context and Patterns**

Hello everyone, now it is almost the culmination of what we have been discussing on Innovation Business Entrepreneurship. We will now divert our discussion slightly towards strategic perspective; how to drive innovation, or how to look for innovation with the reference to market and especially competition and going beyond competition.

It is an important perspective because, innovation requires time investment and energy, energy in all terms you have to bring in people together, they spend a part of their life to go for that particular kind of innovation and, if it does not culminate into where you have actually realized the fruits of the same, then it goes in vain.

And if we calculate or analyze that kind of wastage although it is required, that we should not precisely call it a wastage, but still we analyze that if somehow we would have engaged those kind of resources somewhere else, what would have been the result in. So, that is that kind of an analysis, one has to think of while we are looking for such kind of a progression.

So, but before going for that kind of a view wherein, we think in terms of should be go for conventional competition based kind of innovation or let us say we think in terms of going beyond competition, we should be looking towards innovation with the context of you know it is definitional perspective, as well as the patterns associated with innovation.

So, first of all let us briefly visit, or revisit the definition of innovation and, then try and analyze the, you know a kind of how is it related to products and processes.

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		PRODUCT/PROCESS	
		New	Old
USAGE/PROBLEM	Old	<b>Category 1</b> New solution to an old problem Product: new medications Process: just-in-time	<b>Category 2</b> No innovation
	New	<b>Category 3</b> Most innovative: new product that leads to new opportunities Product: PC in 1980 Process: bar codes for inventory control	<b>Category 4</b> Old product/process used in a new way Product: other uses for a paper clip; DVDs Process: testing soils with satellite imagery

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And then how innovation has a particular kind of a pattern associated with itself as well as the entrepreneurial perspective it propels.

So, going by a widely accepted definition.

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- The process whereby new and improved products, processes, material, and services are developed and transferred to a plant and/or market where they are appropriate.  
◦ (Rubenstein)
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The process whereby new and improved products processes, material and services are developed and transferred to a plant and, or market where they are appropriate. So, it says it all it takes you towards definitional perspective of marketing as well as strategy.

And entrepreneurship also and business at large, wherein it refers to a place, where you find it appropriate, it refers to products, it refers to processes material and services and development of all. So, that is where innovation, but you would realize that, it also refers to improvement apart from being you know referring to new something new.

So, and as we have discussed already it encompasses, products, processes and markets, wherein you know you can visualize the role of innovation, or let us say it the impact and application of innovation either in all three of the aspects products process and markets, or let us say one of those or one by one in all of those. So, any of those kind of conditions that that happened.

So, looking at this definitional framework, one can choose to refer to several examples in relation to let us say products, when you go for an incremental change in let us say automotives, wherein you go for a new kind of an engine technology or let us say you go for a cabin which is different or interiors which are different or kind of dimensions which change the shape and design of the automotive in that kind of a particular statement.

And so many things can be done, there are radical changes wherein people are thinking in terms of driverless cars and that is already a reality now, people have been thinking in terms of several other changes, wherein how cars would be run. So, electric cars are there and solar panel, based cars are already there and so, on.

So, it is actually you know an incremental change and sometimes when cars would have you know come. So, it would have been a new kind of a product actually. So, new and an incremental perspective.

Although new products are difficult to emerge and evolve, most of the times we realize that it is a logical progression of a particular kind of a product, or let us say a need which is fulfilled by that kind of a product and this progression takes the existing product into a different kind of a newer shape, where after a state it looks like new, but somehow it is an improved version of whatever we have been doing.

But then it entirely get is changed then we tend to call it new. So, there is a diminishing line between new and improved kind of so, that has all to be also to be discussed kind of, then there are processes how do you do that. Today when you talk of these kind of

courses, which are being floated on the open source, or let us say internet, then processes of disseminating education, we realize have already changed.

And the contact between the students and the faculty; the processes have already been changed. So, there are several processes which have been introduced in several spheres of life and for example, today we have removed surgical procedures wherein doctors they stand somewhere and, they try to perform robotic surgeries, or they try to guide the surgeries, which are going far away.

So, there are several telemedicine is there are several processes, which have changed material has come a long way and, today we find that material knowledge has changed the entire world wherein how to use.

Although there are positive and negative sides which have all which we have already referred to for example, plastic is has become detrimental, but several other material they have brought in you know kind of larger feasibility, as well as approach for the customers with reference to the existing products, especially in for example, medical equipment, or let us say artificial limbs as I was referring to yesterday, you know and several other things aeroplanes and other technologies as well.

And services it has taken a different kind of a form, when we talk of services and it the entire gamut of services have changed. So, there are products which tend to get converted into product and, services product supported by services or services have changed, their context as far as you know provision.

And those kind of things are concerned it is slightly beyond, when we go into that domain, but we all realize that, it has entirely changed for example, postal services has changed into courier services an internet has supported a different kind of a service development as far as the segment goes. So, entirely there are so, many things which have entirely changed their forms actually.

So, now going for you know how this looks like, in you know and let us say few dimensions. So, once one you have product and processes on one side and on the other side you have usage, or a problem.

Problem which is being addressed by the product, the process the material the service as we have seen in the definitional perspective, or we can look at it with the usage perspective also, how it is supporting for example, if you are looking at a mobile phone as a device through, which you can communicate it has a particular kind of a communication based usage, it is solving the problem of you know getting connected to people.

On the other side if you utilize that same mobile phone for listening to music, or watching movies it is it has a different kind of a context as far as usage goes. So, one device can also have multiple usage and it can solve several problems also.

So, we have to look at products processes material and services with similar kind of a perspective, but the dimensions say that for example, usage and problem can be differentiated in new, as well as product and process it can also to be differentiated into new. And then we find that four different kinds of categories, they get evolved.

Now, look at for example, product is new and, problem it solves or usage is old. Then it comes in you know category one wherein new solution to an old problem, this is the first category we are addressing here.

And the example which is suggested by authors is product, let us say a new medication process is just in time and, but it is you know kind of not entirely a new usage addressed by a new product so, it is one category which we can see.

For example, I have already referred to transportation and I have already referred to a kind of music earlier, we used to listen music through a particular kind of a device now new product has evolved and, but the usage is kind of old. So, that can also be seen with that kind of a perspective although I must remind you here, that there is a very thin diminishing line when we refer to these kind of categories, many products you would find that they can suitably fit into one or more category.

If you look at those products or processes with a different kind of a perspective where you stand and, and you can logically debate on that as well, but then broader demarcation takes us somewhere and it takes us towards a logical kind of a conclusion also.

Then comes in category two and there we call there is no innovation at all because, product is old and the usage is existing usage, or old usage. Can we talk about conventional books in those terms kind of, but although it is also debatable how conventional books have changed their printing patterns and forms.

Then can we say that those books come under, new sort of or improved sort of product and there is an innovation as far as presentation of content goes, it is debatable wherein where in you have a conventional book in your hands. And you say that this is an old product solving an existing problem, or let us say it has a particular kind of an old usage.

But, then if you change the formatting or let us say content presentation, or let us say structure. So, can we say that it comes under category one, it is its slightly difficult to categorize the those kind of things for example, eBooks. Now, eBooks are sort of new they are solving different the existing usage. So, can we say that it is a new product solving or the existing problem or let us say has a particular kind of an old usage and, it comes under category one.

So, there is slight you know kind of thin line between us how we look at things, but still we can categorize e books under category one and existing books under category two as such. So, category three comes in you know it is the most innovative category, if you may look at this..

Wherein product is new or let us say product and process is new, or process is new and the usage and the problem it solves is also new. And you know for example, in 1980s authors have referred to as computer or personal computer and, process is also referred to one of the process called barcodes for inventory control. And you know product was new and, it is solving a newer kind of a problem.

So, that is where you know kind of entirely new product which comes into existence in terms of computers and, then it is solving so, many problems associated with as far as you know daily lives, or let us say computing or forecasting, or programming in terms of you know so many things it has changed the entire world, if we look at it.

So, and there are interesting lists which are being published by several magazines, or journals which suggest that which product do not change their form entirely and which products they, change their form have changed their form slightly or which products

have changed completely or which product products have evolved you know some of the products have evolved entirely new as far as this world goes.

So, for example, popular mechanics publishes the lists list of two kinds of lists or three kinds of lists wherein they published, one list consists of hundred products, which have not been changing their form for example, stapler.

Now, stapler has is an old product and solving a particular kind of an old problem and, it might not change its form in due course of time and eyeglasses for example. There is a less scope for eyeglasses to change its form and you know, there are innovation based kind of changes, which have been made to eyeglasses, but largely the structure the frame the bridge everything is kind of similar when we talk of eyeglasses.

So, there are there are products which might not you know change their form, at all and keep on satisfying a particular kind of a purpose, which would or tends to exist in all its existence.

And there are several other similar kinds of products, which are being referred to for example, matchbox it remains or tends to remain like whatever it was and so on. So, it is an interesting list which they publish and on the other side, there are products which are continuously on the way of getting improved, or incremental changes in their usage also as well as their product.

You know evolution also and you find that things have come along a way and, and you know kind of those products are quite evident all over and take, this computer based, or let us say technology based products. They have higher tendency of getting changed in due course of time, mechanical products, or let us say physical products they have lesser tendency to change for example, we look at furniture we look at chairs.

So, you find that the basic structure and fundamental form of chair, or table remains the same, but there have been so many incremental changes in the outlook or let us say. So, usage remains whatever it has been, but there has been a substantial incremental change, definitely because of material which is being utilized.

Now, and the designing element which goes into it so, IK furniture's when you visit their website you would realize that they have so, many products to showcase which have been continuously changing. And it is an interesting case study of Lego toys.

If you will look at it wherein you would find that Lego toys, they produce plastic bricks which have a universal kind of a shape, but at the end of the day you would realize that they have come a long way, wherein they have taught the world that how those bricks can be formed and reformed into several kinds of structures.

And that is their victory, wherein they have enhanced their market presence and sales of the, this conventional product, to an extent where it you know Lego has been termed as the toy of the century for many times. Wherein you know people have tend to understand that this simple plastic bricks, which is produced in billions of numbers by Lego toys can be utilized for several kinds of purposes.

So, that is a very interesting kind of a thing which Lego is known for. So, there are several inventory procedures which have come a long way, you know as just in time system is referred to here and, then barcodes and inventory control systems have so, you have several kinds of other codes which exist now and so on.

So, then comes in category four, wherein old products process used in a newer way. So, you know paper clips are referred to as DVDs are referred to as, or let us say flash drives they are referred to as and processes testing soils with satellite imagery. And similar kinds of examples are being given.

So, one of my favorites is that earlier bicycles were used as a more of transport, an individual transport, but today bicycles are used for several purposes including health maintenance and so on. And recreation also and you know going along the stills by your car and, then you moving around on your bicycle that that is so, so it has come with a complementary role also and so on.

So, you have realized that product has not changed, at all as far as it is basic structure goes, but usage has evolved into different kinds of with different kinds of perspectives, satisfying different kinds of wants, or addressing newer kinds of needs in due course of time and people, realize that this particular product can be you know looked at with a different kind of a few in their daily lives and so, on.

So, have you seen someone ironing the toast to you know eat later on and so, the that is a wild kind of a thought when you think about these kind of things, and you know older products and a newer usage and so on.

On the lighter side people tend to I saw one advertisement wherein that they show that a refrigerator is when, it is worn out it is used as an Almere. So, the that is on the lighter side, but again old product with a newer kind of a usage, that comes in and you have famous examples like listerine and so on. So, several other examples are there.

Now, let us look at the patterns associated with innovation, visa vie entrepreneurship and evolution of innovation as advocated by or proposed by two thinkers, or two thought processers or schools of thought, if you would like to say that.

So, one is random and other is systematic. So, random school of thought Joseph Schumpeter talk about talks about random thought, where in a you know random process wherein he says that you know there is an entrepreneur associated with you know, as far as innovation perspective course.

Then there is an entrepreneurial risk, associated with you know, because there there is a perspective of an unknown associated with where do you tend to go, as far as innovation is associated and because entrepreneurial risk is further substantiated by trial and error.

Because you are moving towards unknown and it is a random kind of a thing so, you go for trial and error and so, many people actually you know support this kind of a thought process, they say that if you do not try and you do not try to address the errors, how would you reach to a different kind of a result which might entirely be new, or let us say your desired goal would be achieved and so on.

So, there are several efforts which are being made on only on trials and errors, related to the evolution of products and processes. So, and then Joseph Schumpeter says that there is a learning associated with failures, wherein you should be looking towards failures as ladder to success.

So, that the perspective here is when you try and you face the error you face the failure, then you go for you know further improvement in incremental changes, but definitely it has a perspective of cost. It has a perspective of time; it has a perspective of market

choices which might change by the time you get an improvement in this kind of a product.

Did I refer to jaws polymers sometime in my previous discussions, where in this company they came up with pet based jars and bottles at a time, when no one almost no one was there in this country and they were, flooded with the orders which they were getting from all the sides.

But when they were utilizing this machine for producing the product, they realized that actually it is a very lightweight product and it cannot be transferred to faraway places without extra cost number one, number two they realize that the kind of dyes, which they are using in this kind of a product, it makes almost all the difference.

Wherein if you have a multiple diaper machine, then you are producing products of different shapes simultaneously and, if you have ordered related to one product, the other products would go to inventory.

So, there are several aspects which you would learn, but and jaws polymers did learn about this kind of you know these kind of failures, they faced in the meanwhile the other companies they developed the market for themselves they entered into the same segment with jaws polymers tend to address, they got the orders with jaws polymers could not furnish, or they developed new orders as well. And by the time jaws polymers learn from their failures and came out of the losses, they were incurring the market took a different kind of a shape and, they lost the train.

So, it also happens many a times where in for example, small car segment in India got a very large impetus recently in passed 5 or 6 years or a decade or so, now. But then there were you know things associated with that how this small car, market would respond to in times to come and we realize by the time 1 or 2 companies.

They learn from their mistakes they, tend to produce a product which could be acceptable more as far as the small car market goes, by the time market change changed it is preference and shape and fundamentally it lost it is, you know concerned towards these kind of products.

So, and then another aspect which this random school of thought says, that there is a matter of DNA and culture associated with as far as innovation goes. So, if some tends to be innovative he would be otherwise it does not it cannot be developed so easily.

Then there are units of experimentations and spin offs which are being referred to and that is how risk taking, or risk avoiding comes into being and Schumpeter school of thought, you may you may check upon this, random innovation based Schumpeterian thought on other sources as well.

Systematic school of thought or let us say systemic side of thinking as far as innovation goes, it it is say says that there has to be a patterned and it is actually patterned based and, if you look towards things with an abductive kind of an analysis you would realize that, things have been continuously evolving and, then you draw conclusions from that kind of an evolution and structure and restructure the products.

So, it says that there is a way of thinking; you have to just calmly analyze that way of thinking and draw a pattern out of it. And then you come out of a product which actually minimizes the risk with and, it says that it is definitely associated with theory, it has a basis it has a perspective associated with itself.

So, and we find that several products they have been looked upon with similar kind of perspective aeroplanes, they came with a similar kind of an approach and, wherein theoretical framework was there and, then you have steam engines which were associated with similar kind of telephone came and because of this kind of things.

So, you we realized that radical innovation, there are several radical innovation based examples, which have evolved in due course of time with the help of you know a patent based way of thinking and theory supporting that.

Then comes in the context of methodologies and it says that methodological framework has to be visualized to address these kind of this kind of an innovation. And then there is an analytical framework how to look at it and, you know how to analyze that where would be the flaws and where would be the chance of success.

So, there are so many programming based kind of analytical frameworks now and, there is a structured analysis on, you know there are several algorithms which exist today and,

if not then when if someone is an expert of his own field someone can definitely think in terms of then what kind of factors would play a role here and, those factors can be collated and visualized to collaborate with each other in due course of time.

So, and it talks about opportunity maximizing and risk minimizing kind of thing as well. So, it says that when you go by a pattern with the perspective of way of thinking and, take support of theory get associated with theory. And there is a methodological and analytical framework associated with that. So, definitely there is a perspective wherein opportunity is maximized and, risk is minimized and which gives you and impetus.

And it says that you know it can be termed as value innovation school, where in you know you derive more value, although I would not digress into how this value and this random perspective value based perspective and random based perspective can be looked at with a fundamental thought process which humans are you know born with, but definitely there is a context to how we look at it.

And the context just to give you a clue is related with sensitivity and concerned as I was saying yesterday, or let us say in our last discussion. So, that is where you know these two patterns, or let us say these two perspectives can be seen with reference to innovation and that is where I rest this discussion.

Thank you.