

Entrepreneurship Essentials
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Module - 05
Lecture – 21
Identifying Opportunities Based on Trend

Hello and welcome, topic of the session is Identifying Opportunities Based on Trend. Trend of technology, trend of fashion, trend of liking, how the how things are changing. Change is getting accelerated over the years starting from industrial revolution, we have seen how technologies have been changing and if a company is not keeping pace with changing technological paradigm, then it is very difficult to remain competitive in the business.

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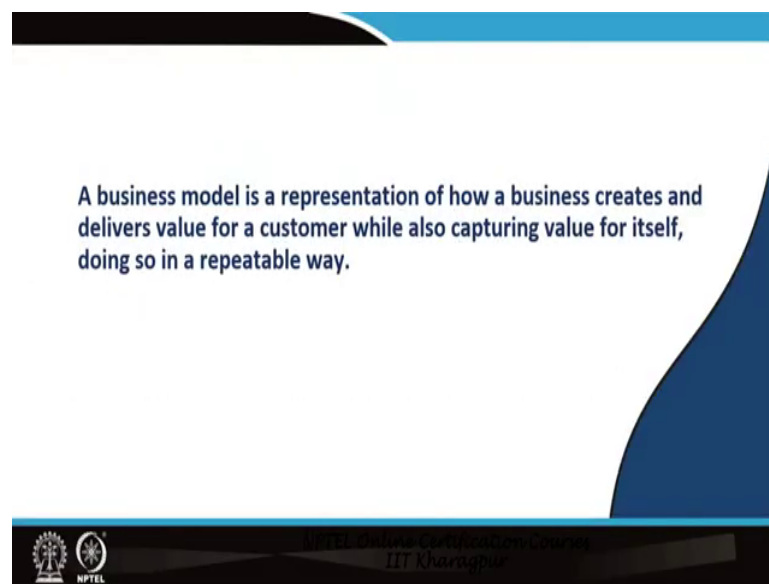
The slide features a dark blue header with two logos on the left and the title 'CONCEPTS COVERED' in white. Below the header, three bullet points are listed in a light blue font. The slide has a modern, geometric design with blue and white color schemes and diagonal lines.

CONCEPTS COVERED

- Various trends defining the emerging business opportunities
- Our civilization has come up with new solutions to meet impending existential challenges – leading to emergence of new technologies.
- Every new technology brings with it multifarious new business possibilities.

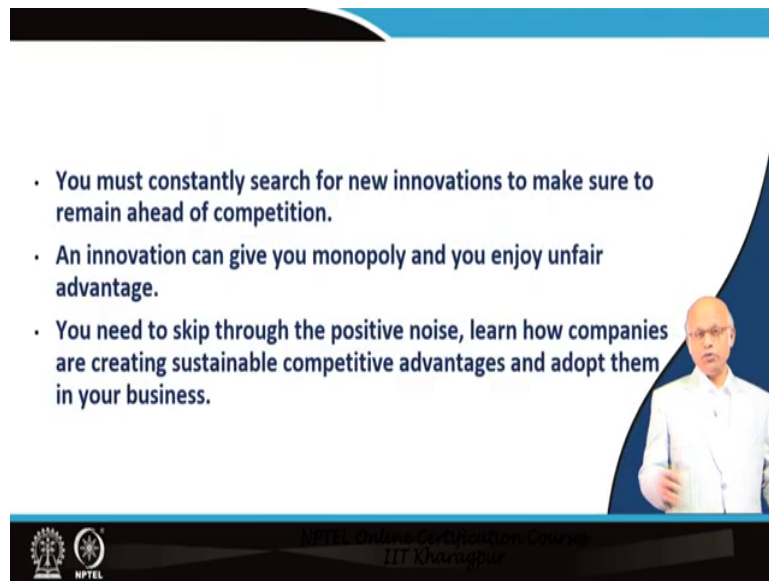
So, we need to understand and formulate a strategies or develop technologies to remain ahead of competition. So, today's topic is based on the trend meaning; based on trend how you define business model, either new a new business model or you would try to tweak your own business model you innovate or change your business model for meeting the change.

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A purpose of business or a business remain sustainable only when they can create value for customer and customer will come again and again and as a satisfying customer. They will spread the message to their colleagues and friends and eventually you have a increasing loyal customer base.

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- You must constantly search for new innovations to make sure to remain ahead of competition.
- An innovation can give you monopoly and you enjoy unfair advantage.
- You need to skip through the positive noise, learn how companies are creating sustainable competitive advantages and adopt them in your business.

So, you must constantly search for new innovations to meet changing customers need. You try to copy strategies that are being followed by other companies and adopt the same in your company and then remain competitive.

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Introduction

- Every new technology brings with it multifarious new possibilities. It disrupts existing technologies and offers opportunities to create new business models.
- Steam engine emerged when there was no technology other than hand-tools.
- It revolutionized the manufacturing process across industries.
- Emergence of electricity transformed the whole industries bringing in unlimited possibilities.
- Advent of electronics has brought telecommunication and programmable logic controller (PLC) bringing automation.

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So, to formally say about change and about trend, let us move back and just quickly come to the present day. See every new technology brings with it some disruption that that disrupt the status quo and then it opens up opportunities for a whole breed of new businesses, like say internet that internet came and it disrupted the way we entertain ourselves.

We communicate way the postal system is no longer there and we can communicate instantly in between there was telephone, then even with telephone there is there is limitation. You have to pay for each call whereas, WhatsApp and Hike and things like that offer you free call. So, you just have to have the data package.

So, likewise it started with advent of steam engine as known facts prior to that of course, there might have been several other changes. Steam engine when steam engine arrived in the in the society there was no technology other than hand tools, even clothes used to be made

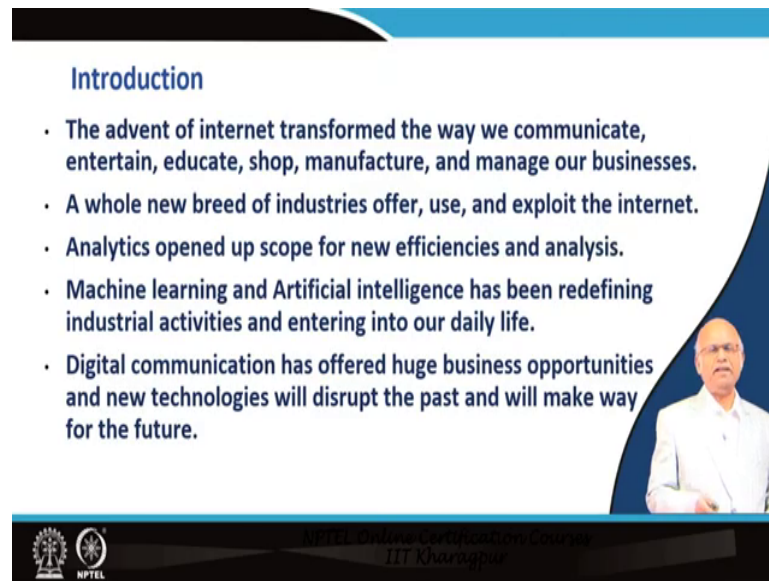
with hand hand tools like a latai or something. Then came a steam engine and it destructed the whole industrial world, because it gave automation; it gave mechanical means of driving a machine.

So, the concept of machine emerged with the steam engine and then industrial revolution started. It revolutionized the manufacturing process, then emerged the electricity with Thomas Alva Edison developing or offering generating and then laying the cables for sending the electricity to home and to factories and then the whole industrial paradigm changed into something very different.

So, everything actually opened up new unlimited possibilities that is very easy to imagine, Just imagine if there is no electricity today, what would have happened. Now with electricity and other knowledge came innovation in electronics, innovation in the form of electronics and telecommunication.

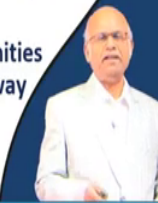
Electronics came with the first electronic thing that that was that created that transform the industrial manufacturing process is the programmable logic controller, with that we could have robot, we could have assembly line that was that made the manufacturing automated that automated the manufacturing process.


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Introduction

- The advent of internet transformed the way we communicate, entertain, educate, shop, manufacture, and manage our businesses.
- A whole new breed of industries offer, use, and exploit the internet.
- Analytics opened up scope for new efficiencies and analysis.
- Machine learning and Artificial intelligence has been redefining industrial activities and entering into our daily life.
- Digital communication has offered huge business opportunities and new technologies will disrupt the past and will make way for the future.



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So, advent of electronics and telecommunication, which is the way we communicate we manufacture and gave a whole lot of competitive advantage or ease of manufacturing. And then came internet in between so many other things came like assembly line and then automobile industry, then aeroplane and what not. But then internet transformed the way we communicate we entertain, we educate, we shop, we manufacture and we manage our businesses.

A whole new breed of industries came into being and then they offer, they offered the internet service, they use the internet service. Some of them exploited the internet to offer newer and newer business, newer and newer products services and businesses. Analytics again very recent phenomena that opened up scope for new efficiencies, new kind of analysis, new kind of decision making tools.

Same thing with machine learning and artificial intelligence. Using machine learning, we create artificial intelligence and artificial intelligence gives us power to make decision immediately, quickly and without the bias of human and it becomes even more reliable than decisions met by human. When where there is a kind of a kind of a regular decision making is involved, like where accuracy is involved.

So, it is a whole new world now and it is going to redefine the way we will lead our life. Because, artificial intelligence is going to enter into our drawing room, our bedroom, our kitchen everywhere. So, things will be absolutely different.

Change is not so much important than the changes that brings new possibilities, new opportunities. So, using artificial intelligence we can imagine that a plethora of new breed of companies who are non exists and suddenly we will emerge an offer newer kind of services newer kind of products that that will entertain us that will make our life easier.

Digital communication has offered huge business opportunities and new technologies will disrupt the past and will make way for the future, like 5G will come. And then many of the communication, many of the of the things that we do through standard communication is going to change like the way we download, the way we watch TV perhaps we will everything will change suddenly. So, and then with change new businesses will come.

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Trend: Selecting business model based on TREND

-  Trend provides great opportunity for starting new & winning ventures.
-  Those who are ahead of the trend or at least at the forefront of the trend, tend to enjoy natural advantages.
-  Therefore, it is important to be able to forecast the technology trend, fashion trend, social trend, lifestyle, economic and environmental trend for creation of attractive new businesses



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So, we need to understand what technology is going to emerge in the near future and what kind of opportunities is going to bring us. More importantly is it going to disrupt my business and then can I identify a new business in this new technology. So, that you can remain ahead, you can you can get some unfair monopoly and unfair advantage to make more profit and your business becomes sustainable.

Therefore, selection of business can be made by understanding or predicting the trend; trend in technology, trend in peoples liking, customers liking. So, trend provides great opportunity for starting new and winning business ventures. Those who are ahead of the trend or at least at the forefront of the trend, they are going to enjoy natural advantage. Just imagine some companies who were; who were already using analytics and offering corporate houses analytics maybe not online, but offline, but some things some analytical analytics tools.


So, when cloud computing became a order of the day and more and more people started using analytics for decision making for understanding their business performance and understanding customers preferences. So, the existing analytics companies could deliver better because they are they were already capable of using data and then translating data into information that helps us to make decisions. So, they were the company who were at the forefront of the trend, that trend was coming, they did not know whether that new or they did not know no matter whatever is the case, but then they could exploit.








So, imagine that some company, if they could predict this and start analytics business would be a; would be would have would enjoy natural advantage. Now therefore, it is important to be able to forecast, obviously and create attractive new business based on the emerging trend.

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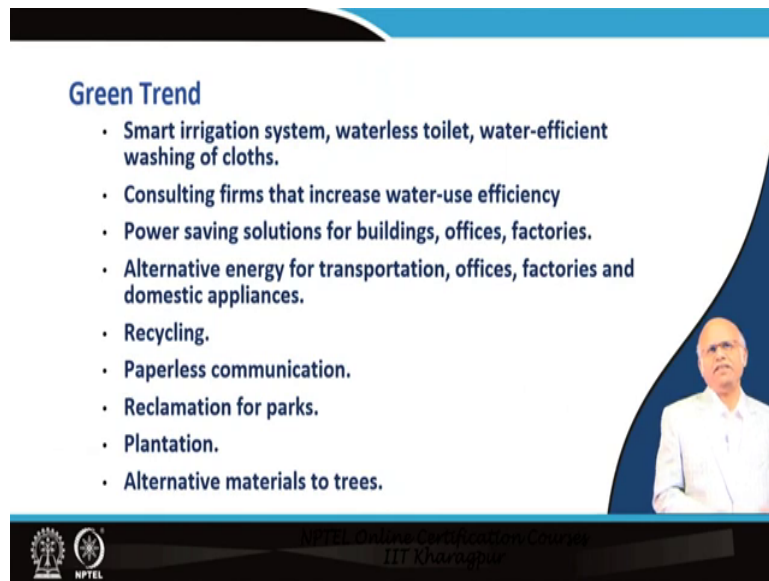
Recent trends defining the opportunity landscape

- Green
- Clean energy
- Organic orientation
- Economic
- Social
- Healthcare
- Web
- Analytics
- IoT
- FinTech
- Digital wallet
- Digital currency (cryptocurrency)
- Robotics
- Drone based technologies
- Artificial intelligence, machine learning
- Energy storage – Battery technology, Super capacitor /Ultra capacitor
- Electric vehicles
- Block chain
- E-commerce
- Digital communication (5G)
- Quantum computing
- Smart irrigation



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Green Trend

- Smart irrigation system, waterless toilet, water-efficient washing of cloths.
- Consulting firms that increase water-use efficiency
- Power saving solutions for buildings, offices, factories.
- Alternative energy for transportation, offices, factories and domestic appliances.
- Recycling.
- Paperless communication.
- Reclamation for parks.
- Plantation.
- Alternative materials to trees.

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Now, here is a list of some of the trends that we have already seen, that has already manifested in our life like say green trend. Green trend means there are many of the items in green trend say smart irrigation is green trend, water less toilet, water efficient washing of clothes and then anything and everything where you use less energy like say paperless communication, like recycling of the waste and recycling of many other things that that otherwise would generate say carbon dioxide.

Then, you can think of saving power for even there are concept of a waterless toilet. So, you do not have to you do not you do not use more of water. Water is precious at number one and then pumping water requires energy. So, using less water actually has double effect. In one end, you save water, water is already scarce on the other end you save energy because, it needs energy to pump. Clean energy it is a already known to everybody.

Organic orientation; organic food in particular, then economic trend. Economic trend is all pervasive and it comes and it goes and new possibilities emerges like during recession you have some kind of businesses which are very relevant. In fact, during recession you can do wonderful business people might think that this is a time when this is not a time to start a good business a new business. Whereas, if you could can really identify what people need during recession, perhaps you can help people at the same time you can make money in the process.

For example, Airbnb; they started their business at a time when America was going through recession. Now, they offer some economical method of holidaying to people who did not have enough money enough disposable income because of recession, but they were looking forward to a cheap kind of accommodation and cheap kind of holiday package.

On the other hand there were many people who did not have adequate income and they had mortgage on their property. So, they needed money to be able to pay for the mortgage. So, they were looking for some extra money. So, Airbnb came at that point of time. They offered these homeowners an opportunity to earn some money on the other hand they offered cheaper holiday package to people who did not have enough money to accommodate in five star hotel.

So, they combined these two ends together and offer unique opportunity to both homeowners and troulbers. In the process, they made money they could create loyal customers and that they made money, it is also regarded as collaborative consumption, meaning; the company collaborated with homeowners and that led to consumption. Because otherwise, this people would not go for the customers, would not go for holidaying that thinking that we do not have enough money for that, but then it promoted a consumption and then when consumption is there, then there is business. Because, unless people are coming for staying there is no business for Airbnb or this home owners either.

Similarly, Uber also offered cheap traveling when there was a recession in US. In the process many people got self employed because, they did not have a business to offer their taxi or any other vehicle for earning money, but then Uber actually offered a unique networking facilities

where customers could understand where and how they can call a taxi and then use that at a cheaper rate and eventually everybody was happy.

Now, there are social trend; everything is known to everybody so, social trend means you know all that Facebook and MySpace, Hike, WhatsApp and what not where you try to connect with your loved ones, not only that you make friends with some unknown people, strangers and then you realize that you have something in common. So, you become a group kind of a thing.

So, it is all entertainment and entertainment promotes business as well like LinkedIn promotes lot of business because you get connected with like minded people, consultants, business, you get business ideas, you get mentor etcetera. Health care; health care is always there it was always there and as economy improves like the third world countries are improving, that is offering wonderful business opportunities and health care. Because, more and more people now can afford health care when people did not have the money they were silently suffering, but now they are empowered because, they earn money and then they can they can afford to get or avail health care.

But then if there are businesses offering health care then the two ends meet together and then everybody is happy. Web trend is perhaps the most significant trend now and it has transformed our lives perhaps the most among all the other technologies. We have some slide moving forward.

Analytics, IoT, FinTech, Digital wallet, Digital currency like cryptocurrencies, there are many many cryptocurrencies, Robotics, drone based technologies it is just emerging already there are fatalities in drone base entrepreneurship, but then they are ahead of perhaps they are ahead of time. So, things are kind of transforming, so there will be churning of entrepreneurial ecosystem which is happening already. Artificial intelligence machine learning we are in the thick of it and it is going to remain there in the foreseeable future it is going to accentuate and going to transfer our lives in a big way. That is what oh we miss people forecast.

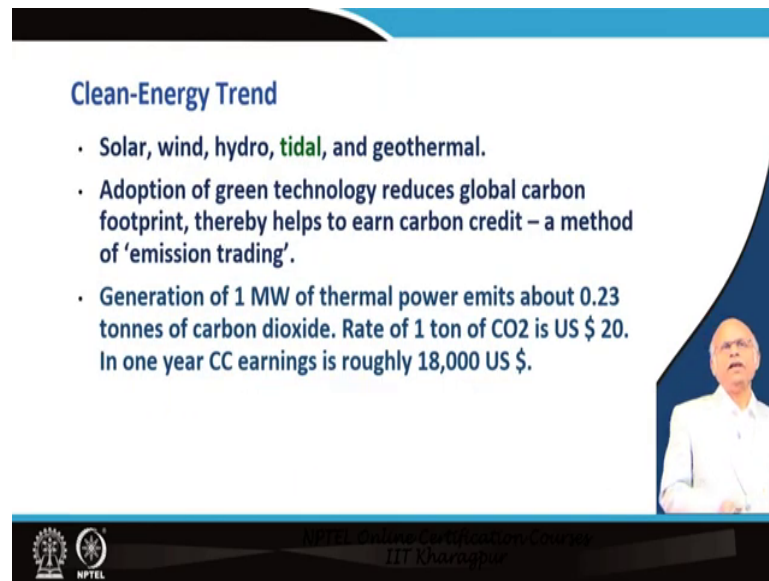
Energy storage and battery technology, super capacitor, ultra capacitor with the move towards clean energy like say solar power, the role of battery and a storage system is going to be more and more significant. Both for replacing fossil fuel and using some storage system to store natural energy means; energy renewable energy and then use it in cars. At the same time a store the a store energy in the day time and use it in nighttime or whenever sunlight is not available. So, battery technology or super capacitor or ultra capacitors are going to assume more and more significant; more significance moving forward.

Electric vehicle; so, with battery technology improving electric vehicle will be more and more popular. I did not mention about autonomous vehicle that is another emerging technology and it is going to remain autonomous vehicle then, bullet train kind of or say hyperloop that was that Elon Musk has introduced perhaps that will be order of the day moving forward. Every country will have some kind of hyperloopers or the other blockchain. Blockchain is already there and it offers unique security for internet service providers like, banks or say any kind of digital wallet or digital maybe any document that is stored digitally.

Then E commerce; we are in the thick of it. Digital communication, 5G is just on the door and it is going to transform majority of the businesses which are wave dependent because of the speed, because of the ease at which information can be made available. Quantum computing is yet to emerge, but the technology has already been demonstrated and the moment it will be popular like when personal computer became popular after mainframe we are this almost like a analogous period. Personal computer will give way for quantum computers and then it is going to revolutionize the computing world.

Smart irrigation is another thing where irrigation can be managed, can be monitored, can be controlled remotely, wirelessly and then intelligently. Because, now information is not available unless somebody goes to the field make some tests physically and then there is a lag between understanding testing and understanding and then and then taking action. Whereas, smart irrigation is going to make things real time you just collect data immediately and immediately take action and productivity may go actually up.

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Clean-Energy Trend

- Solar, wind, hydro, tidal, and geothermal.
- Adoption of green technology reduces global carbon footprint, thereby helps to earn carbon credit – a method of 'emission trading'.
- Generation of 1 MW of thermal power emits about 0.23 tonnes of carbon dioxide. Rate of 1 ton of CO₂ is US \$ 20. In one year CC earnings is roughly 18,000 US \$.

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So, green trend; green trend also is related to global warming as well. So, plantation becomes part of it; then many more things clean energy trend. So, we are already in the thick of it in the sense that, solar and wind power are competing with thermal power. Solar power rate has already gone down to something like 2.4 rupees or so per unit compared to thermal power unit cost of say may be may be slightly more than that.

So, the renewable energy cost is just has become more competitive compared to thermal energy. So, there is there will be no reason why the clean energy or renewable energy is not going to be dominant over fossil fuel. Wind turbine wind energy also is competing with thermal power plant. Then we have hydro is kind of cheaper compared to many of the other energy format, we have tidal energy and then geothermal.

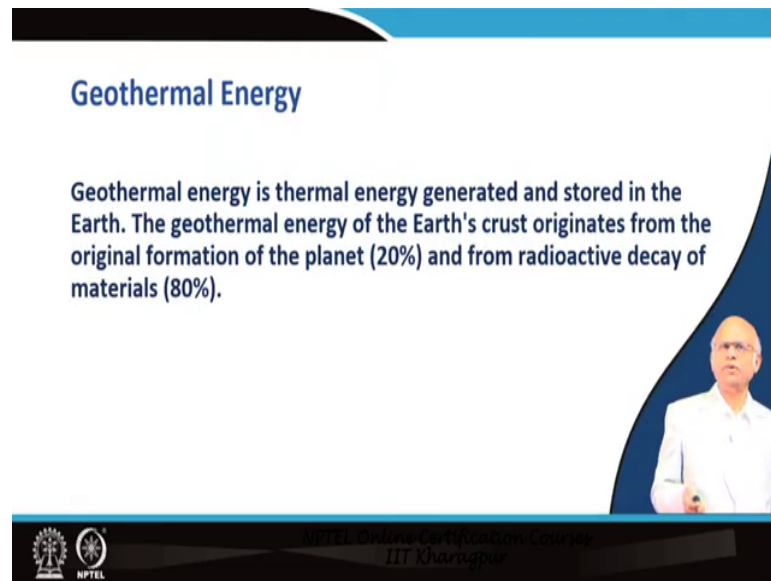
Geothermal, perhaps is a cheapest among all of them, but then it is not feasible at all the locations. It is feasible at locations where the underground temperature is high that is not at a very high depth. Normally at a depth of something like 3 to 5 kilometer temperature will be 250 degree Celsius.

Whereas in some geographies temperature just below the ground will be more than 100 degree Celsius, maybe 200 degree Celsius where the steam comes automatically out of the ground. So, in those places it is highly viable, you just have to send water under the ground and then you get a steam convert that into power. Look at how much of the carbon dioxide that you save by using renewable energy.

Emission trading has become a usual business model, wherein by sacrificing use of thermal energy or generation of thermal energy. Replacing the thermal energy with solar energy wind or hydro energy, you can eliminate carbon dioxide generation.

In the process there will be someone who is actually emitting carbon dioxide and they have no option, but to continue to do that because, they have already sunk lot of capital. So, they will give you money, they will almost like they will buy carbon dioxide from you that is what is emission trading and 1 ton of carbon dioxide is valued something like 20 dollar. Just to give a sense of the term 1 megawatt of thermal power emits about 0.23 tons of carbon dioxide and 1 ton is sold for 20 dollar. So, by replacing 1 million, 1 mega Watt of thermal power plant with renewable energy, you are going to save something like 18000 dollar in a year by trading carbon dioxide.

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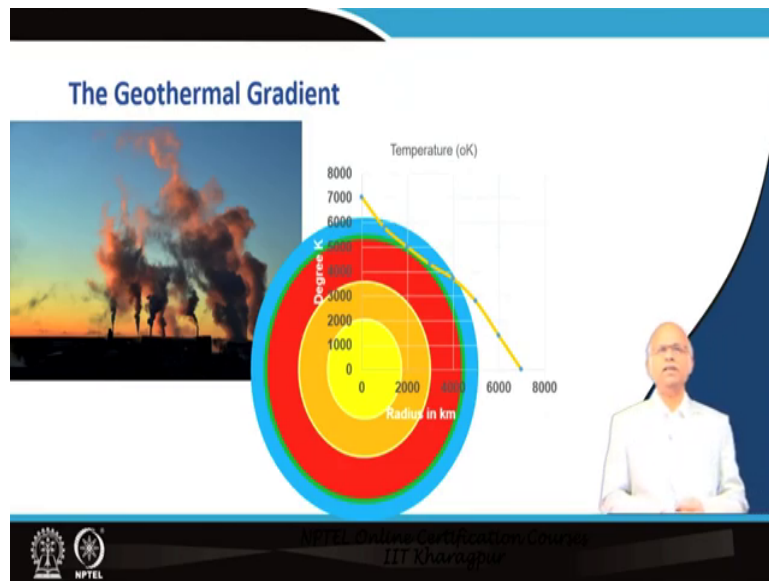
Geothermal Energy

Geothermal energy is thermal energy generated and stored in the Earth. The geothermal energy of the Earth's crust originates from the original formation of the planet (20%) and from radioactive decay of materials (80%).

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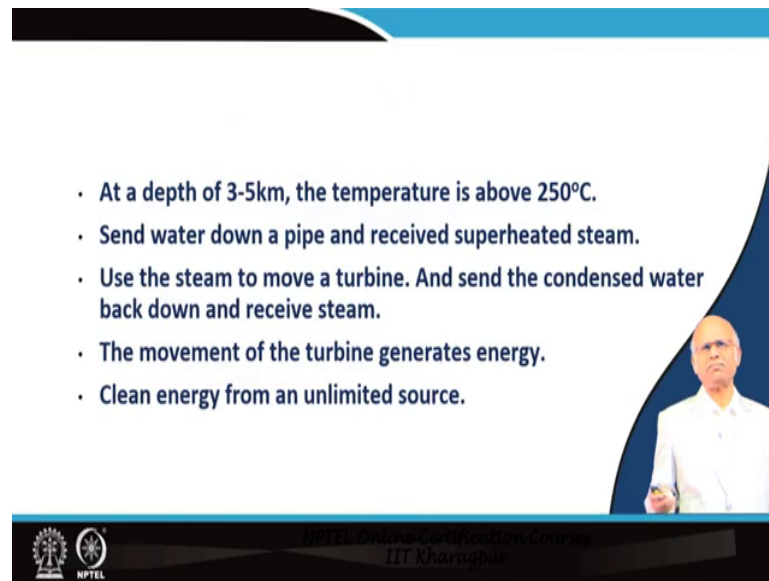
Geothermal is very simple as I said, but then it is geography specific because everywhere you cannot really do. It may not be viable, you definitely can do because under the ground temperature is very high the deeper you go the temperature is higher. But then if the if you have to go deeper then it becomes less economic if you get it at a lower depth, then it is more economic here is the temperature gradient and across the across the radius of the earth.

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So, at core it is about 7000 degree Celsius, at the surface you consider that as 0 compared to means; if you if you express that in terms of 1000 so, 0, 1000. So, you can go deeper and deeper and get more and more energy and do not think that by tapping earth energy we are going to reduce anything from the earth. Because, earth energy is generated continuously through tectonic movement, through chemical reaction like, like something like say nuclear fusion or something that happens at the core of the earth at a depth of 3 to 5 kilometer temperature is 250 degree Celsius.

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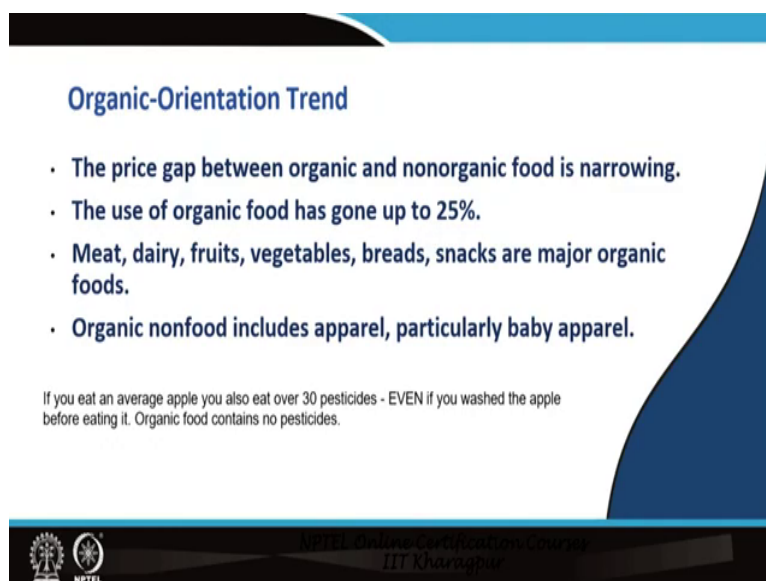


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- At a depth of 3-5km, the temperature is above 250°C.
- Send water down a pipe and received superheated steam.
- Use the steam to move a turbine. And send the condensed water back down and receive steam.
- The movement of the turbine generates energy.
- Clean energy from an unlimited source.

Now, you send water deep down through the pipe and receive superheated steam. Use the steam to move a turbine and send the condensed water back down and receive a stream again. So, it is just a cycle you do not have to put more water maybe you have to replenish a little bit of wasteness, but otherwise it becomes a cycle. So, water goes down and steam comes in and it becomes a automatic cycle. The movement of the turbine generate energy; obviously, clean energy from an unlimited source.

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Organic-Orientation Trend

- The price gap between organic and nonorganic food is narrowing.
- The use of organic food has gone up to 25%.
- Meat, dairy, fruits, vegetables, breads, snacks are major organic foods.
- Organic nonfood includes apparel, particularly baby apparel.

If you eat an average apple you also eat over 30 pesticides - EVEN if you washed the apple before eating it. Organic food contains no pesticides.

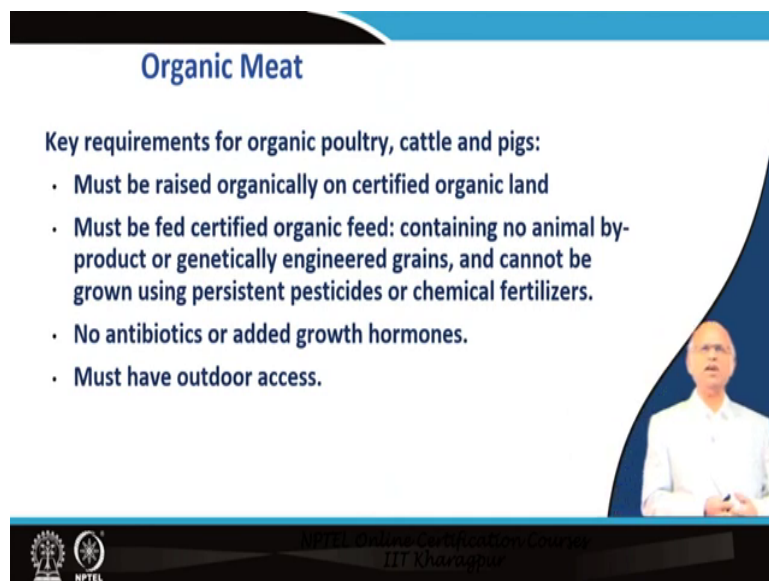
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We talked about organic trend. The price gap between organic food and the inorganic food; in organic in the sense foods that are produced using chemical fertilizer, chemical insecticides which gets inside the food. So, it is not really good for consumption. So, and it because it uses chemical fertilizer and chemical pesticides, manufacturing of that is energy intensive. So, eventually you end off leading to higher energy consumption and higher emission.

If you eat it organic food you do not promote that you there is no chemical fertilizer or pesticides in organic food. In that sense, you actually save carbon dioxide emission. So, you try to avoid meat dairy then or maybe you eat organic meat, you eat organic dairy, organic fruit, organic vegetable, organic bread, organic snacks. These are all available in organic format.

Organic non food includes like apparel, like particularly baby apparel where people do not use say cotton that is manufactured with lot of pesticides or say a lot of fertilizers because that remains in the fiber and then it may affect the baby body in some sense. If you eat an average apple, you also eat over 30 pesticides; I have taken this from a website it is there in the reference. Even if you wash the apple before eating it, it contains 30 pesticides organic food contains no pesticides.

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Organic Meat

Key requirements for organic poultry, cattle and pigs:

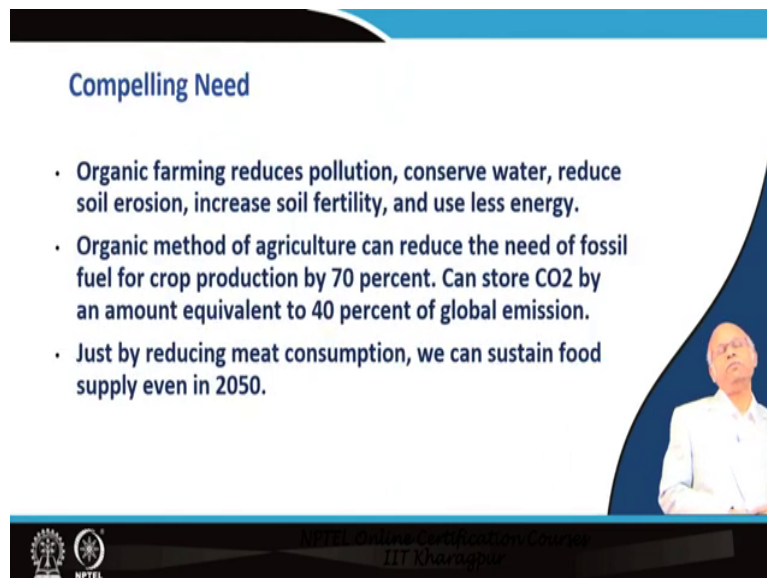
- Must be raised organically on certified organic land
- Must be fed certified organic feed: containing no animal by-product or genetically engineered grains, and cannot be grown using persistent pesticides or chemical fertilizers.
- No antibiotics or added growth hormones.
- Must have outdoor access.

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We are talking about organic meat. What they are? If you have any question on of that kind then here is the answer. Any chicken, mutton or any animal should be raised organically or certified organic on certified organic land, must be fed certified organic food containing no animal by product or genetically engineered grains and cannot be grown using persistent pesticides or chemical fertilizer.

No antibiotics or added growth hormones should be administered on the animal body. Must have outdoor access meaning that animal should be free to roam about, it should not be enclosed in an enclosed chamber and that. If it is enclosed then some toxins get secreted and then eventually the meat does not remain good.

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Compelling Need

- Organic farming reduces pollution, conserve water, reduce soil erosion, increase soil fertility, and use less energy.
- Organic method of agriculture can reduce the need of fossil fuel for crop production by 70 percent. Can store CO₂ by an amount equivalent to 40 percent of global emission.
- Just by reducing meat consumption, we can sustain food supply even in 2050.

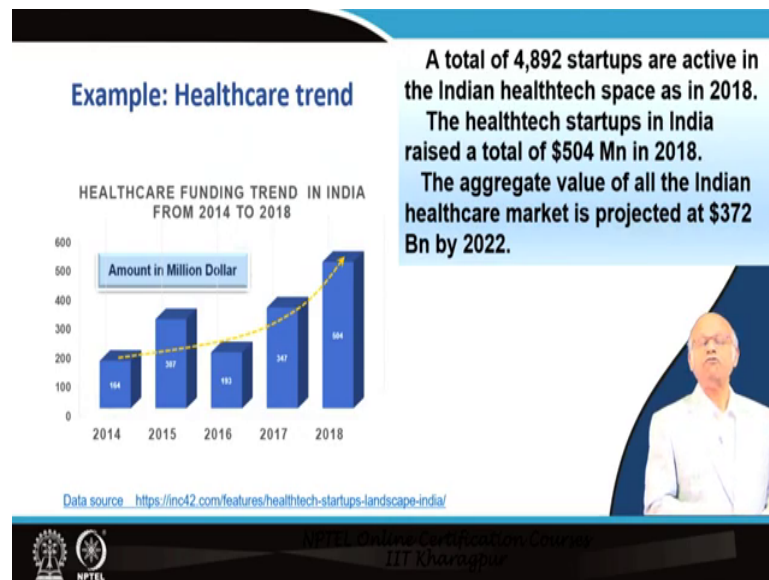
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So, what is about all the hullabaloo about organic? Organic farming reduces pollution, obviously. Then conserve water, reduce soil erosion, increase soil fertility and use less energy. Organic method of or organic method of agriculture can reduce the need of fossil fuel; obviously, for crop production by 70 percent. Can store carbon dioxide, that is equivalent to 40 percent of global emissions.

If all the lands in the world becomes organic or all agriculture is done organically, then 40 percent of carbon emission can be reduced. Not only reduced, but 40 percent of the carbon dioxide global emission can be absorbed in farm farmland by plant by farm land.

Just by reducing meat consumption we can sustain food supply even in 2000 2050 meaning meat actually consume a lot of water and it emits out of carbon dioxide, whatever meat you name. So, if you stop eating meat you will save the world from carbon dioxide emission and you will save lot of water.

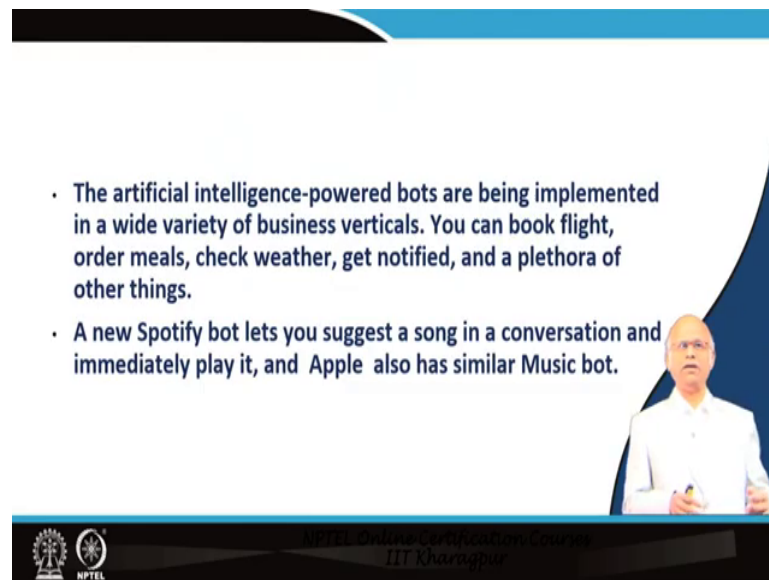
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Healthcare is a new trend in India and look at the amount of investment that is happening in Indian startup. So, from 164 million dollar or so in 2018, the investment has come up to 504 million and there is no stopping because, there are more and more opportunities. People are

actually waiting to avail better and better health care services. So, new opportunities are available in healthcare in a big way.

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- The artificial intelligence-powered bots are being implemented in a wide variety of business verticals. You can book flight, order meals, check weather, get notified, and a plethora of other things.
- A new Spotify bot lets you suggest a song in a conversation and immediately play it, and Apple also has similar Music bot.

New trend is artificial intelligence. It is artificial intelligence powered bots are being implemented in a wide variety of business verticals. You can book flight, you can order meal, you can check weather get notified and a plethora of other things. So, suppose you just want to check whether your loved ones has boarded a flight and whether the flight is delayed or when it is going to land, when it is already landed. If some information pops up automatically or some alert rings and rings an alert and you get to know that flight is delayed by half an hour.

So, without really needing to look into your cell phone or check your mail or check the website. Artificial intelligence is making all that possible, not just that many many other

things it is just an example. A new Spotify bot, let us you suggest a song in a conversation and immediately play it and apple is also like suppose you are in a conversation that I would like to hear some say Mohammed Rafi song of this kind etcetera etcetera.

So, before you can search or before your friend can suggest Spotify will have a bot that is listening to your conversation and then immediately it pops up a song and it starts singing and you are amazed. Similarly, suppose you want to buy something you are making a search and I am capturing the information based on your search whether it is in a social media or maybe google. Some suggestion automatically pops up and you realize that this is the best thing possible because, it will capture your emotion, it will capture your liking, preferences and then give the most optimum one. So, that is how artificial intelligence is going to transform.

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Chatbot
Redefines the way businesses interact with customers

- Healthcare
 - Personalized experience, schedule doctor, notify caregiver
- Banking & Financial
 - Notify services, maturity information, & many more
- Hospitality
 - View & compare offers, compare room, availability info
- Manufacturing
 - Provide real-time information
- Retail
 - Keep customer informed about offers
- Insurance
 - Customer updating
- Human resource
- Sales & Marketing – smart segmenting
- Supply chain
- Customer care
- Workplace productivity - Business texting
- Content search

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Chatbot redefines the way business interact and interact with customers. Like for healthcare, it personalized it gives personalized experience, it schedules doctor it notify caregiver. For banking and finance notify services suppose bank comes up with a new interest rate immediately notifies. Maturity information your fixed deposit has matured information comes automatically nobody has to physically do that and many more; hospitality, manufacturing, retail insurance human resource.

Name any domain and artificial Chatbot is already giving us this experience, new experience and it is going to give us more and more making life easier and reducing our daily activities daily work, we can concentrate on more important things.

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Some Specific Trends that Helped Creating New Business Opportunities

- Usage
- Lend and pay a fee
- Collaborative consumption
- Circular economy
- Good enough or frugal innovation
- Free – Freemium, google, Spotify – zero marginal cost society
- Performance based business model
- Experience – you
- pay money to go to a concert/show, though you can listen to the music free
- Crowd sourcing
- BoP/poor

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Here are some more specific trends that that helped creating new business opportunities in the in the recent past. Usage based commerce like, rather than selling something people may use

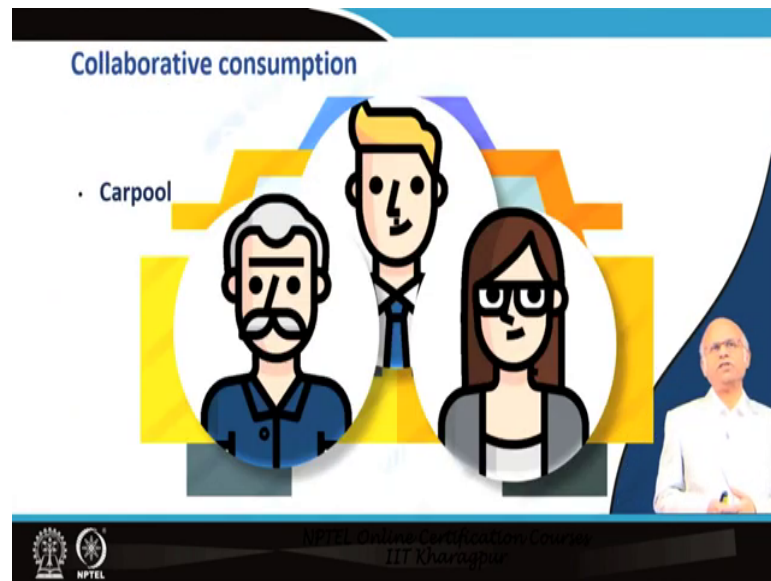
it for a while and then pay. Lend and pay a fee collaborative consumption have already given an example of Airbnb and then Uber etcetera. Circular economy, earlier economy was use and throw, consume then throw and then let it pollute something like that. Circular economy actually restrict the pollution it kinds of recirculate and reuse it promotes reuse reutilization.

Good enough to frugal innovation; meaning, frugal innovation is innovating something that that eliminates anything that is unnecessary or less necessarily almost like a lean product development philosophy. Free and then Freemium use they offer bare minimum thing as free of cost, but then if you want premium things then you pay premium. So, freemium performance based business model, like say you sell a machine and if the user uses it better then they get some reward or something

So, that during warranty period you do not have to pay them some money, likes a car you give a car to somebody they use it and then pay a lease rental there are many many models on that. Experience; you pay money to go to a concert, but to download and have the convenience of listening to the music on the go you have to make some premium payment.

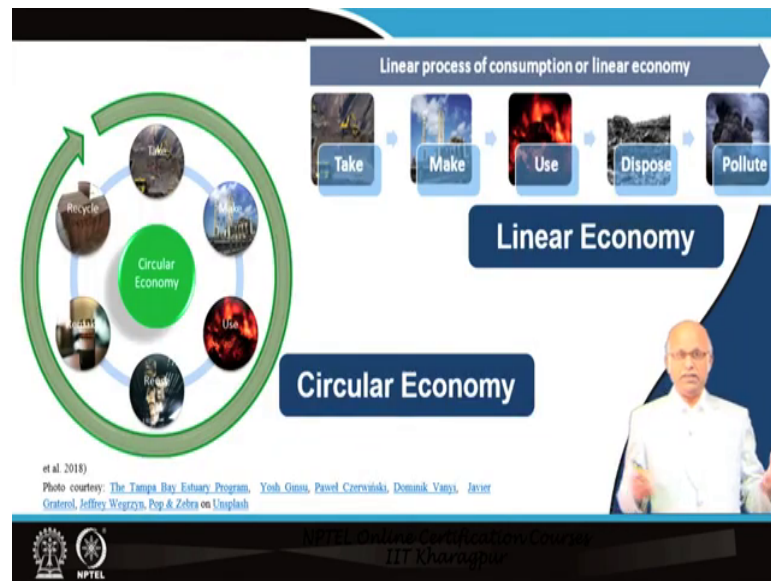
Crowd sourcing; crowd sourcing means you source from the crowd, may be innovation, may be money, may be a suggestion, may be strategy, may be anything that you want maybe even medical services, BoP etcetera.

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Creative consumption; collaborative consumption like Uber or like Carpool. You have a car then you engage with some other 2 3 4 guys and then earn money at the same time reduce emission because other people are not using another car.

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Circular economy; so linear economy is take make use disposed and let it pollute whereas, circular economy is take make use, reuse then remake and recycle.

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Economic Trend

Recession

- garden products, business coaching, discount retailing, credit and debt management, virtual meetings, outsourcing, and entire do-it-yourself movement.
- Collaborative consumptions.

Economic growth

- Discretionary expenditure (wants rather than needs), luxury goods, car rental, travel and tour, investment management healthcare.

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So, at the end you avoid pollution and you avoid depletion of resources. For example, if you think of construction industry, the stone chips queries are reducing or getting exhausted. So, there is a there is lack of sand, lack of stone chips apply. Suppose you find an alternative in some mining areas or somewhere and you can use this to supplement construction material, then you are actually supplementing the depleting resources at the same time you are preventing pollution on the other hand.

Economic trend; we have already mentioned that when there is a recession or there is growth, both time there are different kinds of opportunities that emerges. So, we have to understand the trend and then do accordingly. Like discount retailing is the right business during recession. Whereas, luxury business is when there are economic growth people have disposable income, they have surplus income and then they can use that to buy something that

that is not so much essential it becomes want rather than needs. Whereas, during recession it is the needs that is to be fulfilled not really what people want.

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Social Trend

- Connecting to friends and relatives
- Facebook, Myspace, LinkedIn, WhatsApp, Hike, Tinder, Pinterest, Instagram, Flickr
- Aging population have unique problems. Even aging entrepreneurs offer business opportunities.
- Annual festivities

The slide features a small inset image of a man in a white shirt on the right side. At the bottom left, there are logos for NPTEL and IIT Kharagpur. The text at the bottom center reads 'NPTEL Online Course on Entrepreneurship IIT Kharagpur'.

Whereas during growth phase whatever they want they can buy something respective of whether they really need them. Social trend; already discuss we will not spend lot of time on that. More importantly, aging people they have unique problems like health care like they can be self sufficient by doing a business. So, they can become an entrepreneur even at oldage, there are there is a story that 94 year old lady recently become an entrepreneur by manufacturing something some food items and then selling that.

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Health Trend

- Aging population needing health care is a long term trend today.
- Cosmetic procedure, mind expansion such as the brain gym or Vibration Brains, personal health portals, point-of-care testing facilities, fitness centers, fitness toys, fit food, convenient care clinic, wellness coaches.



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Web Trend

↑↓ 2G 3G 5G

- As we moved from one generation of wireless connectivity, newer business models emerged disrupting the status quo
- Low cost entry-barrier in consulting, blogging, online video, mobile applications, Wi-Fi apps, direct to home delivery of contents (Netflix)
- Apple and Android allow entrepreneurs to create and market their applications retaining 70 % of the revenues generated.
- Online interactive games have offered high growth opportunity
- E-Commerce

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Health trend we already discuss and then you can see then web trend is the most pervasive trend in the industry in the technology. And with 2G, 3G, 5G we have been empowered with newer and newer opportunities our life became much better with every change in technology paradigm.

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https://webflow.com/blog/web-design-trends-for-2020

Web design's biggest trends for 2020

- **Designing truth – separate truth from promotion**
- **Accessibility is the key – 26% of the United States' population experiences some form of disability**
- **Content is no less important in UX design – content is more important than design**
- **Inclusivity is key – empathize, treat “others” not as others, but as part of us**
- **The no-code revolution has arrived – just write and code get generated.**
- **The rise of the visual developer - coder or not, its easy**
- **Role is not identity - everyone is a designer**

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And in web design, there are so much of changes that is happening all around. So, this has been taken from web flow, look at how web design is giving a new kind of customer experience, like say design designing the truth meaning that there are so much of fake news and so much of fake information and people are baffled and most people do not understand the difference between the right thing and the wrong thing.

It is very difficult even for advertisement, very few people can distinguish advertisement from a from a news item. There was there was a study done by Stanford, 82 percent of middle school children could not distinguish between advertisement and news. So, they thought this is news and they trusted advertisement as if they are the truth.

So, you have to design something which is actually true and you have to give people the opportunity, the capability to make a distinction between truth and untruth. Avoid whichever

is fake, so that people are people do not fall into trap by politician by companies who have a different agenda, accessibility is the key meaning there are people with say differently abled people, people with disability. So, you have to make people like 26 percent in United States, they have some kind of disability or the other, it might be more in India and other places.

So, we need to think of them and then offer facility for them to access everything that other people can access. Content is no less than experience or the design per se. People designing experience is a wonderful thing and this is the most emerging thing, most demanding thing for business. But, then content is very important as well, if we invest more on experience design or the design per se and we neglect the content; people will read the content will not understand the meaning of it or it might be obnoxious, it might be bragging on the part of the company and then people may not come back again.

So, we have to really focus on the content as well. And we have to empathize with everybody, we have to think other people as us and then we should not write anything that hurt them. So, inclusive is the key that no code revolution no technology is changing is revolutionizing in such a manner that in a person without any coding experience can write code. There are platform where you just type what you want to type and a website will be built.

The rise of visual developer, again that is also a no code kind of a tool Where, visually you can drag and drop items and a wonderful website will be built website or portal. Role is not identity meaning; if you are a designer that is your that is your identity, but anybody can be a designer. So, role does not actually define the identity that you are in.

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2020 Trends May Inspire New Business Ideas

- 1. Peer groups for community interaction
- 2. Implementation of machine learning and AI
- 3. DevOps availability for businesses of all sizes - Automated cloud deployments
- 4. Demand for professional organizers - "Tidying Up with Marie Kondo"
- 5. Continued demand for sustainability - quality, long-lasting items
- 6. Increased use of drones and 3D cameras
- 7. Emphasis on personalized experiences
- 8. Consumer preference on convenience
- 9. A growing gig economy
- 10. Support for veteran entrepreneurs

<https://www.uschamber.com/co/start/business-ideas/new-business-trends>

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2020 Trends; this has been taken from US Chamber and there are 10 inspiring business ideas that the thing that will define new businesses. So, this is I thought this is very relevant for you so brought it here. The reference is right here you can read more about each item. Time is short so I am just flipping the pages only.

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Following are some trends about customer engagement.
Ignore at your own peril.

1. Consumers will demand more control over their data.
2. Alternative lending will continue to grow.
3. Everything that can be personalized will be personalized.
4. Subscription services will continue to skyrocket.
5. Socially irresponsible firms will struggle.

An article by Rathan Dixon in <https://www.entrepreneur.com/article/323660>

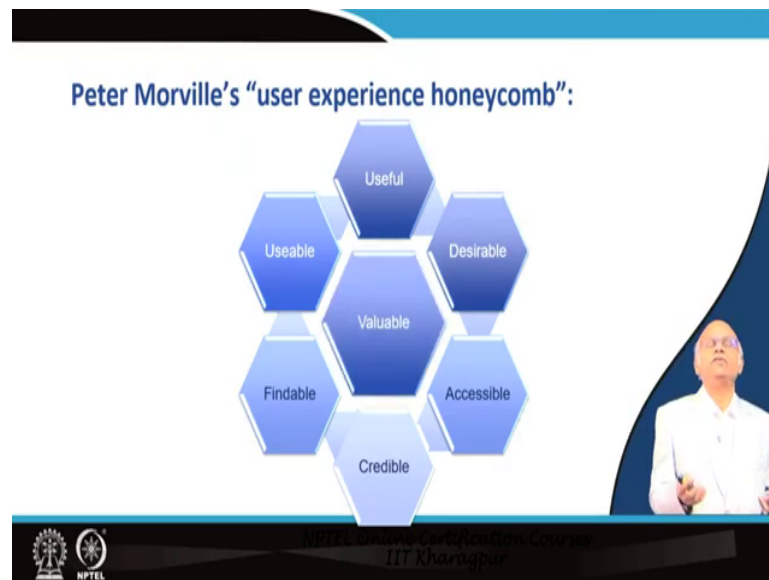
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Following are some trend about customer engagement. Consumer will demand more control over the data, alternative lending will continue to grow because banks have their own limitation, bank cannot provide access to everybody, then everything that can be personalized will be personalized. Suppose you enter into a restaurant and then restaurant offer you a cubicle depending on your dress perhaps they capture what kind of color you like and the light glows and you feel. So, soothing atmosphere because you like that color something like that.

So, this kind of personalization is going to happen everywhere and you are going to get satisfied because nothing is going to kind, if we kind of repulsive to you. Subscription based service you do not have to buy a car you just subscribe and use it for a while, this is going to

skyrocket meaning for everything is going to be subscription model. Socially, irresponsible forms will struggle.

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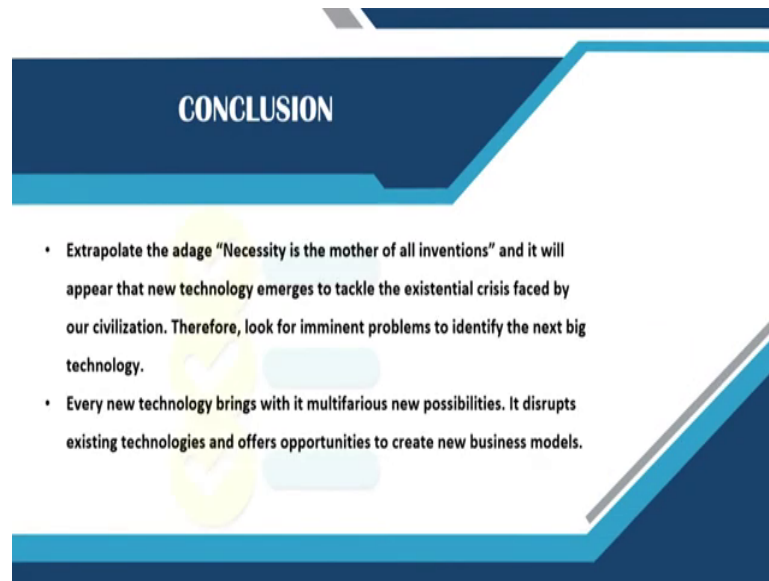
So, be very ethical, be absolutely ethical, otherwise you are not going to survive. We talk about user experience and user experience will remain is here to stay and prosper. So, understand what defines user experience. Peter Morville has these items useful, whatever you do it should be useful. Utility is the or is the core of any service or product desirability, then accessibility, then credibility, then find findability that should you should you find found easily then usability. And finally, it will create wonderful value to your customer and customer will become loyal to your company and brand and will come again and again.

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REFERENCES

- <https://www.cbinsights.com/research/arvr/>
- <https://inc42.com/features/healthtech-startups-landscape-india/>
- <https://webflow.com/blog/web-design-trends-for-2020>
- <https://home.kpmg/xx/en/home/insights/2018/12/kpmg-artificial-intelligence-in-control.html>
- Icons from <https://www.flaticon.com/>
- Icons made by Eucalyp from www.flaticon.com
- The White Space and Business Model Innovation by Mark W. Johnson

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CONCLUSION

- Extrapolate the adage “Necessity is the mother of all inventions” and it will appear that new technology emerges to tackle the existential crisis faced by our civilization. Therefore, look for imminent problems to identify the next big technology.
- Every new technology brings with it multifarious new possibilities. It disrupts existing technologies and offers opportunities to create new business models.

Some references and few concluding remarks.

Thank you very much.