

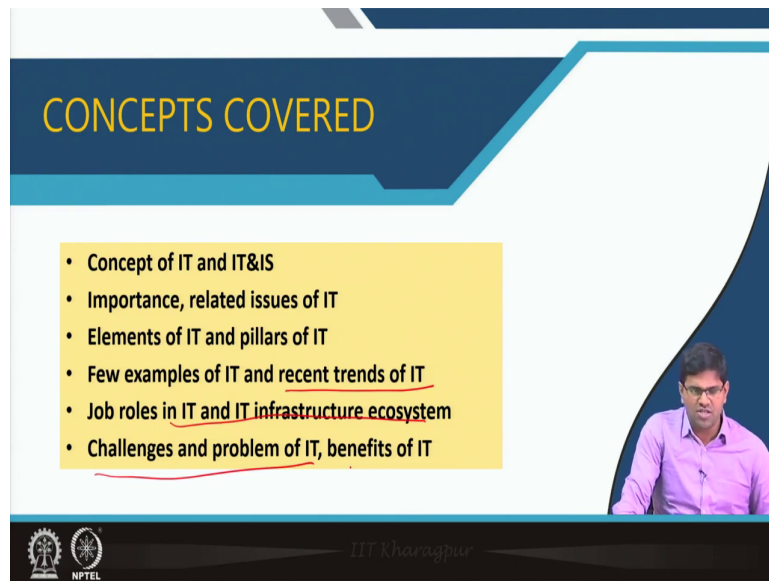
Organizational Design Change and Transformation
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Module - 09
Lecture - 44
IT and IS

Welcome to lecture 4 of week 9. In previous lecture we were actually talking about knowledge management and even before that particular lecture we are talking about learning and then we talked about learning management and we also discussed about learning management system how it is important. The moment we are talking about you know creation of a learning management system where we are essentially going to talk about technology environment.

So, though we spend more time on talking about technology theories of technology in today's lecture we are going to discuss about one another important aspect in an organization setup this is IT and systems. So, in this lecture we are going to introduce the concept of IT and you know IT and IS systems. So, what are the applications what type of an IT technology been used in the organizations.

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The slide features a dark blue header with the title 'CONCEPTS COVERED' in yellow. Below the header is a yellow box containing a bulleted list of topics. A small video inset of a man in a purple shirt is visible in the bottom right corner of the slide. The footer includes logos for IIT Kharagpur and NPTEL.

CONCEPTS COVERED

- Concept of IT and IT&IS
- Importance, related issues of IT
- Elements of IT and pillars of IT
- Few examples of IT and recent trends of IT
- Job roles in IT and IT infrastructure ecosystem
- Challenges and problem of IT, benefits of IT

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And we will also look at you know specifically on the importance of the IT system and also related issues which are attributed may be termed as a challenges as well. And we are also going to discuss about elements of IT and pillars of IT information technology. And we will discuss about few examples of you know how this IT been used in the workplace context or an organizational setup and what are the recent trends and developments happening on the IT.

So, we are going to spend very briefly about you know what are the recent trends happening in the IT. And also, we are going to discuss about job roles in IT and IT infrastructure ecosystem and we are going to discuss finally, we are going to discuss about challenges and problems related to IT and we are going to discuss about benefits of IT. So, these are what we are going to cover in today's lecture. Let us get into the lecture, ok.

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The slide features a title bar at the top with the text "Concept of Information Technology". Below the title, there are two bullet points on a yellow background. The first bullet point defines technology as a combination of skills, knowledge, abilities, techniques, materials, machines, computers, tools, and other equipment used to convert raw materials, problems, and new ideas into valuable goods and services. The second bullet point defines Information Technology as the use of hardware, software, services, and supporting infrastructure to manage and deliver information using voice, data, and video. A speaker in a purple shirt is visible in the bottom right corner of the slide. The slide also includes logos for IIT Kharagpur and NPTEL at the bottom.

Concept of Information Technology

- We are well aware that technology is now the way of life. It is the combination of skills, knowledge, abilities, techniques, materials, machines, computers, tools, and other equipment that people use to convert or change raw materials, problems, and new ideas into valuable goods and services.
- Information Technology means the use of hardware, software, services, and supporting infrastructure to manage and deliver information using voice, data, and video.

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So, to understand to before go and discuss about all the elements, pillars and the significance it is very important to develop an understanding. Though many people who are already working in IT enabled organizations are probably you know IT expert as well when we are working or probably some of you are an student who have specializing yourself in information technology.

So, now we will create a certain fundamental understanding on what is this information technology is all about. Now, we are all aware that you know technology is now the way of life. And especially post COVID, even before COVID people are talking about a technological disruption especially in an organization setup. So, technology has been you know evolving and new type of technology has been coming up every day and making the previously available technology obsolete or not even relevant for today's context.

So, we are living in an era where technology is a way of life. We are dependent on technology for various things. Even our day to day functions are dependent on a technology. For example, scheduling a calendar in a workplaces or you say automated messages and tracking of you know happenings and automated push messages so many things we are talking about even our day to day functioning we are seeing the you know advent of technology and the penetration of technology in everything.

And especially in an organizational context it is definitely you know felt more extensively. So, look at now it is generally a combination of skills, knowledge, abilities, techniques, it about computer, tools related to it and other equipments that people use to convert or change. You know when we say any organization, we have this input and then the conversion then the output.

So, it can be even in IT industry yes, we have an input and there is a conversions and there is an output, right. So, it may be converting into you know valuable goods and services. So, that is why you know in IT technology have been effectively used. Now, let us try to understand what is this information technology means. Here if this critically means about use of hardware and software, services and supporting infrastructure to manage and deliver information's either using voice or data or on video, ok.

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The slide features a title bar at the top with the text "Concept of Information Technology & Information System". Below the title, there are two bullet points in a yellow box. The first bullet point defines Information Technology (IT) as a computer-based tool used to support information processing needs. The second bullet point defines an Information System (IS) as a system that collects, processes, stores, analyzes, and disseminates information for a specific purpose. To the right of the text, there is a hand-drawn diagram in red ink showing "IT" and "IS" connected by a vertical line, with a circular atomic-like structure to the right. In the bottom right corner, a man in a purple shirt is visible, likely the presenter. The bottom of the slide contains logos for IIT Kharagpur and NPTEL.

Concept of Information Technology & Information System

- Information Technology (IT) refers to any computer-based tool that people use to work with information, to support the information and to meet up the information-processing needs of an organization.
- An Information System (IS) collects, processes, stores, analyzes, and disseminates information for a specific purpose of the organization.

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Let us look at this in a specific definition as well. So, information technology and information system right, we have we are using this IT and IS. What is this IT and IS? So, Information Technology specifically refers to any computer base tool that we use to work with informations or support the informations are to you know information processing that required by an organization.

So, essentially information technology is a computer based tool related to you know work with an informations or support the informations or the processing the information that an organizations required, that is what information technology essentially refers to. Now, comes information system. What this information system does?

The information system actually collects the information, process, stores, analyze those informations and also disseminates the information for a specific purpose of an organizations. For example, let us talk about you know analytics where we are talking about.

So, you collect large amount of data and you know process the data, you know screen the data then you know store the data analyze and disseminate a specific information in what form and what specific informations you require. That is the information system is referred to, ok. This is the you know what IT is referring to and what is this information system referring to.

We are just building the building blocks to you know go further. And you will be wondering you know why all of a sudden, we are talking about you know IT and you know information system in a course like organization design structure and change and transformations.

So, it is not a surprise, but every organizations has you know extensively using this IT information technology and systems so extensively and to an extent what has actually happened? It is going to transform the way companies functioning. So, it requires certain requirement of an organization to make a design change or make a structural change to accommodate how far the technology can be taken.

For example, many technologies are taken away many job roles and many technologies has actually enhance the kind of a coordination communication happens. Now, the technology is actually assisting many organization a prior to where used to have people or you know physical documents to be transferred lot of coordination required.

So, it has a lot of implication to understand how this actually has a many relevant way in terms of looking at the design and the structure as well. So, we will see very extensively in the next lecture, but in this lecture, we are trying to build the more understanding on all this IT and information system, ok.

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Importance of Information Technology

IT plays a significant role in the core business practices, activities, and dealing with other stakeholders, which include:

- Product development and design;
- Marketing and market research;
- Sales and invoicing;
- Customer development and retention;
- Accounting and taxes;
- Human resources and payroll; and
- Regulatory compliance.

The slide features a blue header, a yellow text box, and a presenter in a purple shirt. Logos for IIT Kharagpur and NPTEL are at the bottom.

Now, why information technology is become very important? So, it in place a very critical role in core business practices. It is not just only about a supporting, it is see it involves extensively in supporting the core business practices, activities, dealing with various stakeholders.

Not only about you know internal stakeholders we have external stakeholders, customers, clients, employees, shareholders so many stakeholders are involved. This information technology helps us to you know deal with all those stakeholders more effectively.

So, in what ways this IT is actually helping the companies in carrying out their core business activities? It involves in product development and design, it involves in marketing and market research and sales and invoicing, a lot of automations are happening, customer development

and retention, where we are talking about you know chatbots, a enabled customer interactions where some of us also you know the moment you open any web pages.

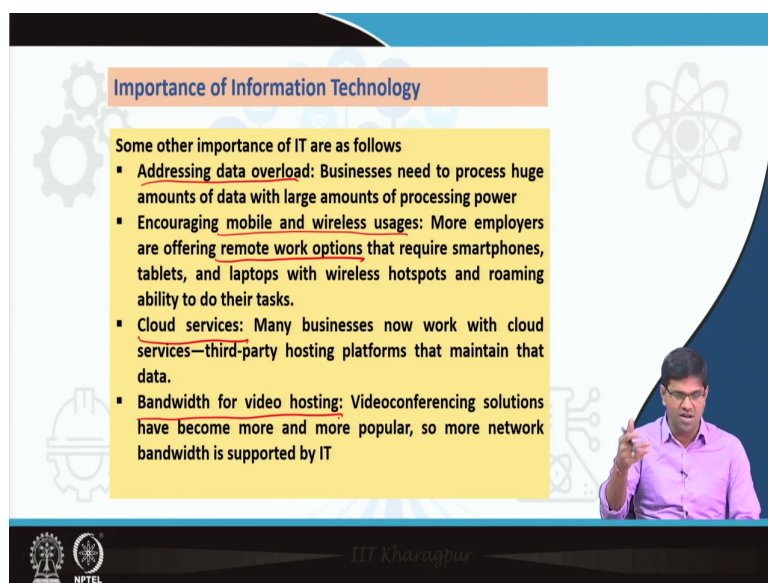
Let say you are doing some banking transactions go to ICICI web page or the insurance portal, the moment you open you see that there is a chat bots, there is an automated system, ok. Hi. So, what do you want? The moment you respond, it you know responds to you with specific informations.

While we are talking about this IT has been extensively used in terms of customer development and retention and also accounting taxes, human resources and payroll of course, you know IT has been you know extensively used in terms of you know generation of the payroll.

Now, you see earlier organizations were small in number, people used to do a manual calculations or even excel based turnover calculations. Now, if you look at the large number of you know employees and then it is automatically the technology helps us to you know takes the number of days working days and generate the payroll, what are the deductions, how much one has to get the net pay, all that has been helping helped by the technology.

Then of course, a regulatory compliance in always you know IT has in some form the other form very extensively started to you know help us to carry out the critical business activities of a company. So, becomes this IT has become so critical and important, ok.

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The slide is titled "Importance of Information Technology" and features a yellow background for the text. It lists four key points about IT's importance. A presenter in a purple shirt is visible in the bottom right corner of the slide frame. The slide also includes logos for IIT Kharagpur and NPTEL at the bottom.

Importance of Information Technology

Some other importance of IT are as follows

- Addressing data overload: Businesses need to process huge amounts of data with large amounts of processing power
- Encouraging mobile and wireless usages: More employers are offering remote work options that require smartphones, tablets, and laptops with wireless hotspots and roaming ability to do their tasks.
- Cloud services: Many businesses now work with cloud services—third-party hosting platforms that maintain that data.
- Bandwidth for video hosting: Videoconferencing solutions have become more and more popular, so more network bandwidth is supported by IT

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Now, you know going beyond this also you look at you know this IT is actually helping us addressing the data overload business, sometimes needs to use process the huge amounts of data with large amount of processing power. We are talking about now big data analytics where now others information the technology is actually helping us to handle those huge volume of data and with a you know higher processing power to you know see ok, how I can handle those data. Because now every data is so critical and valuable so this technology is actually helping.

And you know encouraging mobile and wireless usages because for example, now many employers are going for remote work options where we are talking about work from home you know it required smart phones, tablets or laptops with you know wireless hotspots and you know being connected wherever you are. So, this technology is so critical unless

otherwise your technology and technological infrastructure is not supportive, then organizations cannot do it.

Now, especially a post COVID most of us know that you know many organizations you know made 50 to 80 percent of their workforces to work remotely right, you know I do not need to use the physical spaces in the office where I am going to save cost on it, but provided I do not have a better technology so that I am able to make sure that my employees are productively carrying out their activities wherever they are.

Then it also now talk about cloud services many businesses, now work with the cloud services third-party hosting platforms that maintain the data right, you know going for cloud services buying the cloud space instead of I managing my servers and you know incurring lot of you know expenses now they go for third-party platforms and buying the cloud services, right

Then going for a bandwidth for video hosting. So, video conferencing solutions have become more and more popular. Because we are talking about you know when we say virtually connected or remote work places within this you know processing of this video and now that becomes so critical that is to be supported by the IT.

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Information Technology and Related Issues

- All peripherals which will not operate unless connected to a computer or network
- All voices, videos and data networks and the equipment, staff and purchased services necessary to operate them
- Operating costs associated with providing information technology
- Costs associated with developing, purchasing, licensing or maintaining software
- Technology based services provided by vendors or contractors

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So, that is why you know information technology is so critical. Now, there are certain related issues as well. Let say you know all the peripherals you are talking about a technology related peripherals which will not operate unless connected to be a computer or network know you need a computer or network to you know make sure that peripherals have been effectively used.

And when we talk about you know voice videos and other data networks and equipments staff and at least you know purchase services are necessary to operate them, you need people though you have to you know of course, incur more cost. For example, then say next point also talking about you know operating cost associated with providing information technology may go high depending on the kind of technology, the volume of technology are going to use.

And when we say cost associated with is also associated with respect to developing a technology, purchasing a technology, licensing maintaining a software, right.

For example, during COVID many of your education institutions also bought a license for example, zoom platform or an MS teams or a WebEx and the same case you know working professionals as well where your company started to use some of the other platforms the moment I wanted to use it, I need to buy them with a license.

And there is a you know I need to manage them; these are all cost related aspects when I use the technology. Of course, technology is of a great help, but at the same time a company has certain challenges with respect to the cost that you are going to incur on procuring, managing and any advancements they wanted to make in on that.

And technology based services also provided by vendors and contractors most often you know company cannot invest large amount in creating an internal player rather they go for you know go for an outsource vendors or a contractors. That again a little challenging sometimes you know manage the contractor they might take little time and you do not you do not get the immediate services as well.

Of course, you know companies like you know contractors vendors want to improve upon. But there are certain issues with respect to this IT related system that when you use in an organization, that we will in detail we see towards the end when we talk about the challenges of this you know IT in an workplace or IT management, ok.

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The slide features a central diagram of a flower with seven petals, each labeled with an IT element: System, Servers, Storage, Services, Staff, Securities, and Supervision. The title 'Elements of Information Technology' is at the top. A yellow text box at the bottom states: 'There are seven S model of IT elements. They are system, servers, storage, services, staff, securities and supervision.' The presenter's name 'IIT Kharagpur' is visible at the bottom of the slide.

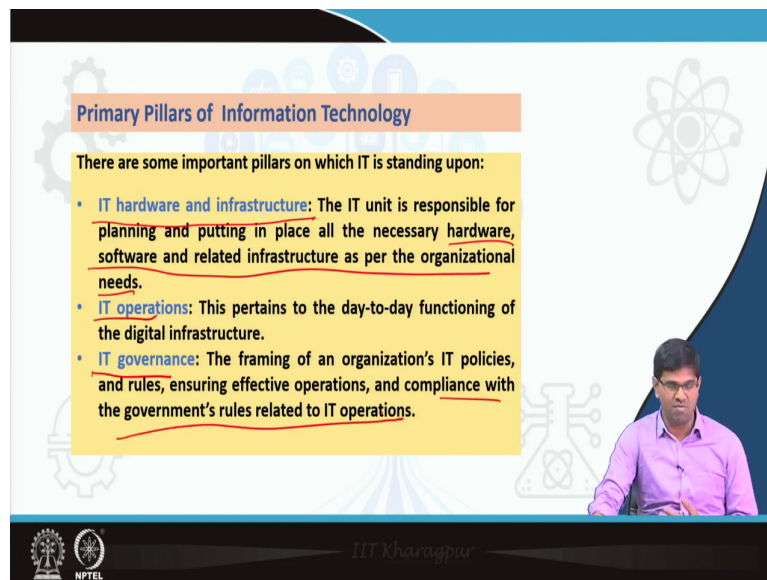
Now so far we are just you know building our understanding and trying to see why it is important, what are the you know certain challenges that we talked about. Now we look at what are the elements in an information technology, you see there are seven S model this is very famous model.

If you talk about there are seven S it starts with systems, servers then storage, services, staff, securities and supervision. This seven S model is are a key elements in any information technology we are talking about.

As the first we are talking about a system. So, you should have a system then of course, you know you were talking about you know servers, staff, supervision, storage and all that is a key elements in an information technology. So, this makes our information technology very

relevant for us and these are the critical element that exist in any information technology you are talking about.

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The slide is titled "Primary Pillars of Information Technology" and lists three key areas: IT hardware and infrastructure, IT operations, and IT governance. A speaker is visible in the bottom right corner of the slide frame.

Primary Pillars of Information Technology

There are some important pillars on which IT is standing upon:

- **IT hardware and infrastructure:** The IT unit is responsible for planning and putting in place all the necessary hardware, software and related infrastructure as per the organizational needs.
- **IT operations:** This pertains to the day-to-day functioning of the digital infrastructure.
- **IT governance:** The framing of an organization's IT policies, and rules, ensuring effective operations, and compliance with the government's rules related to IT operations.

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Now, let us look at what are the pillars of information technology, ok. So, that makes the information technology you know deliver the benefit what we are talking about in our organization setup. The first is IT hardware and infrastructure very basic that you need to have the hardware and then infrastructure support that are the pillars for any of the technology.

So, you know if you take it in a very simple example you know you need to have a computer, you need to have a laptop, then you talk about let us say you are talking about now working for a remote work culture, then you are talking about we need a modem, hotspot connectors

or you know you need you know internet connections to you know work that you know you are able to use those platforms to virtually connect with each other and then carry it on, right.

So, generally IT department and organization is responsible planning and putting in place all necessary hardware, software and other related infrastructure as per the organizational needs. So, the very critical element for any technology based activities is that you need to have the hardware and the necessary infrastructure support.

For example, during the COVID many organizations who has to you know hurriedly has to you know move from physical work practice to a virtual work practice the major challenge everybody encountered was the creation of this you know basic IT infrastructure. When we talk about IT infrastructure may maybe the hardware technologies and then of course, the other supported infrastructure support. That is very critical for any technology, ok.

Then comes IT operations. Now this pertains to you know day to day functioning of a digital infrastructure, how are you going to make sure that you know all the technologies are going to running smoothly, there is no hiccups or any challenges on usage all that we are talking about IT operations is also another important pillar for an information technology. Then comes the governance. See now framing your organizations IT policy now you talk about you know we are talking about you know privacy, data privacy, data security.

So, you should create a IT governance. So, as an organization you need to create your IT policies and rules ensuring that effective operations and of course, a compliance with you know government rules related to IT operations. We are talking about ensuring the data security and you know all these aspects. We are talking about where you need to create this IT governance. That is again become another important pillar for information technology.

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The slide is titled "Primary Pillars of Information Technology" and lists three key areas of focus:

- **Servers, networks and storage:** Maintaining business applications, services and infrastructure.
- **Troubleshoot the performance:** Application of services and infrastructure monitors, optimizes, and trouble shoot
- **oversees the security and governance of applications, services, and infrastructure.**

The slide features a blue header, a yellow text box for the list, and a presenter in a purple shirt in the bottom right. Logos for IIT Kharagpur and NPTEL are visible at the bottom.

Then next one comes the servers, networks and storage. You know it is very critical as you are you know having lot many you know technological tools or hardware systems are people are working multiple people work in a similar process, you definitely need to have servers and networks and a storage system. So, that is very critical. So, maintaining business application and services and infrastructure you need to definitely create this you know storage and servers and the networks, ok.

Then troubleshoot the performance. So, the application of services and infrastructure monitors and optimizes and troubleshoot them. So, and next important pillar is comes you know oversees the security and governance of application services and infrastructure. So, you need to kind of you know supervision of this you know security and governance aspect of this.

Usage of this application and IT enabled services is also very critical and a primary pillar for information technology. Starting from you know IT hardware and infrastructure to the you know IT governance and operations, then comes the servers storage and networks are all they comes with the primary pillar for any information technology, ok.

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Few Example of Information Technology

- **Security monitoring:** Businesses routinely employ tools to monitor and log activity application, networks and system.
- **New software:** The business determines a need for a new mobile application that can allow customers to log in and access account information

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Now, let us now understand some of the examples of this information technology being used, right. Let say security monitoring you know business I mean we are referring to organization business organizations (Refer Time: 17:51) routinely employ tools to monitor log activity applications network and systems the organization do it, right. Now to monitor the people and the securities or there are creating a systems when you log out login and you know network and systems that they do.

Then comes you know let us say a development of a new software when a business decide that I need to have a new mobile applications that can actually allow my customers to log in and access account informations yes, I am coming up with the new software to you know further customer development and the you know managing my customers that you engage.

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Few Example of Information Technology

- **Business improvement:** A business requires more availability from a critical application to help with revenue or business continuance strategies.
- **User support:** Developers are building a major upgrade for a vital business application. Developers and admins will collaborate to create new documentation for the upgrade.

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And also look at the business improvement. You know a information technology use for business improvement, business may require more availability of critical applications to help with the revenue and business continuance strategies. For example, let us take an example of a banking industry.

So, now, you see the banking industry as coming up in you know extensively wanted to take the advantage of the technology, right. Now just imagine a decade ago where you will always

see that the huge a queue in the bank or even a small branches what where the next to you would have seen a smaller branches where all the time it is crowded.

Now, if you look at organizations when the banks started to have their own applications all the online transactions and mobile applications that that has become you know where business improve. You know they are extensively used to create many critical applications that they are able to ensure that yes, they are able to continue their business and at the same time generate more revenue and more businesses and expand the horizon of the business you know applications, right.

Then user support. Now developers are building a you know major upgrade for vital business applications and developers and admins will always collaborate to create new documentation for the upgrade. So, you talk about these are certain examples where you know information technologies been used in the you know organization in various forms. So, now as we have already learned about all this you know pillars and you know what are the elements then we talked about certain examples.

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The slide is titled "Types of Recent Trends in Information Technology". It lists 14 trends in two columns, each with a red checkmark. Handwritten red annotations include "RBI" at the top right, "Blockchain" at the bottom left, and a box labeled "Digital Currency" with arrows pointing to "Artificial intelligence" and "Blockchain".

Types of Recent Trends in Information Technology

The different trends of information technology included to:

- Analytics ✓
- Automation ✓
- Artificial intelligence ✓
- Cloud computing ✓
- Communications ✓
- Cybersecurity ✓
- Data/database management ✓
- Infrastructure ✓
- Internet of things ✓
- Machine learning ✓
- Maintenance and repair ✓
- Networks ✓
- Robotics ✓
- Software/application development ✓

Handwritten annotations: RBI, Blockchain, Digital Currency

Logos: IIT Kharagpur, NPTEL

Now we are moving forward with the types of recent trends in information technology. What is it actually happening in this information technologies where we are talking about analytics, you know we are talking about data analytics, big data analytics that is becoming a major forever in an when you talk about information technologies.

Then we are talking about automations. Yes, people are looking at can we automate where moving from the mass production to the you know advanced the automated productions to cater to the larger number of the requirement of the customers and you know and people like, then artificial intelligence we are talking about artificial intelligence again when we are relating to this machine learning artificial intelligence.

Then we are talking about cloud computing, communications, cyber security, data security and cyber security of course, data based management creation of IT, infrastructure, IoT

internet of things, maintenance repair on this information technology of course, networks, robotics, software and application of these are the you know recent trends in the information technology where we see that you know how this recent developments happening around this using this information technologies.

Especially you know very recently people are talking about big data analytics and we are talking about you know automations, we are talking about artificial intelligence, machine learning, deep learning these are all becoming more usage in many technology based organization even you know largely organizations also use.

For example, let us talk about you know RBI right, as a country we are also introducing you know digital currency, right. Cryptocurrency is now you know talking about a digital currency creating you know digital wallet where we are talking about how technology has been you know extensively used by talking about a block chain, right.

So, block chain technology has been used where as a country we are also introducing a digital currency, where we are talking about see how information technology is penetrated in various functioning as well. Even you know general public has to use their technologies going forward, right.

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Job Roles in Information Technology

Different types of job roles in IT may be but not restricted to, as follows:

- Chief Information Officer ✓
- Information System Director ✓
- Information Centre Manager ✓
- Applications Development Manager
- Project Manager Manages
- Systems Manager
- Operations Manager
- Programming Manager ✓
- Systems Analyst ✓
- Business Analyst ✓

Handwritten diagram: CEO → CTO → Functional Area → IT Systems. Below IT Systems: Operations, Marketing, Finance, HR.

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And then you know now let us look at some of the job roles in information technology. You know now if you look at every organizations now have this you know a certain function, different functional area now. See now if you look at you know earlier many organizations only focus on operations right, marketing you know human resources right, finance and human resources HR.

Now, if you look at IT and systems. IT and systems become a very critical functional area in most of the organizations, ok. Now because we are seeing you know organizations are extensively using this technology. So, as become that functional you need to create a independent functional area for this information technology and systems, you need to manage the technology, ensure that you know there is a flawless business happens and it generates more opportunities and the revenue for a business, right.

So, now if you look at what are the job roles related to IT, right. There is a Chief Information Officer you see that you know many organization use this Chief Information Officer or Chief Technology Officer CTO you know right, you know if you look at you know CEO now very equivalent to this now we are also have a CTO, right. So, chief technology of a Chief Information Officer and then information system director and these are certain you know largely available job roles.

Now many organizations might have in addition to this are probably in a different you know nomenclological differences probably there in some organizations, ok. Information system manager, application development manager, project managers, system managers, operations manager, programming manager, system analyst and business analyst so, these are different type of job roles are coming inside, ok.

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The slide is titled "Job Roles in Information Technology" and features a yellow box containing a list of roles. To the right of the list, there are handwritten red annotations: "Functional Roles" with an arrow pointing to the list, and "Smaller?" with an arrow pointing to the list. The slide also includes logos for IIT Kharagpur and NPTEL at the bottom.

Job Roles in Information Technology

- Network Manager ✓
- Database Administrator ✓
- Auditing or Computer ✓
- Security Manager ✓
- Web Master ✓
- Web Designer ✓
- Systems Programmer ✓
- Applications Programmer ✓
- Emerging Technologies Manager ✓

Functional Roles
Smaller?

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And also, to you know understand further there are network manager, database administrator you know auditing or security manager, webmaster, web designer, system programmer you know applications programmer and emerging technology manager. Now, you have to again understand we are all talking about in this course on organization design and structure.

So, if you look at when there is a creation of a new functional area and this functional area has more as so many job roles so many job roles. So, what does it generally has an implication. So, meaning that. So, the technology become integral part of the business functioning, the way how business has been carried out and it will definitely have an impact on the structural differences, right.

What type of a structure you are going to have, how technology has been used in this technology? Now if you have so many job roles. So, however, you are going to fit them in, how they are going to be connected in the you know connecting a organogram in an organizations.

So, now that is why we are talking about that is where you should understand there is a say relevance we are discussing about you know these many job roles are there and it will have to fit into the organizational structures where are we going to fit them, how are we going to effectively use them and then see that how we create you know structure that is going to accommodate all these new things are coming up in an organization setup, ok.

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IT Infrastructure Ecosystem

IT infrastructure is the foundation for IT Services and businesses. It requires a holistic view to maintain ecosystem. That may be included -

- Data Management and Storage
- Internet Platform Apache
- Computer Hardware Platform
- Operating System Platforms
- Enterprise Software Applications
- Networking and telecommunications
- Consultants and System Integration

The slide features a blue header, a yellow text box, and a presenter in a purple shirt in the bottom right. Logos for IIT Kharagpur and NPTEL are at the bottom.

Now, let us also talk about this IT infrastructure ecosystems, IT infrastructure is the foundation for you know IT services. Because you if you remember when you talked about you know pillars of information technology we obviously, started with the hardware and the IT infrastructure, right.

So, you know creating this you know infrastructure ecosystem is very important, it requires a holistic view to maintain the ecosystem in an organizations. So, you need to you know talk about many other things you know we are talking about a data management and storage because information system is talks about you know processing stores and data management as well.

And you know internet platform, computer hardware platform, operating system platforms, enterprise software where we see you know information or resource connections, resource

usage are been extensively used in an organizations. And networking and telecommunications, consultants and system integrations and now you need to create a better ecosystem, IT infrastructure ecosystem so that you are able to effectively use this technologies in your work places, ok.

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The slide is titled "Challenges and Problems in IT System" and is presented by a man in a purple shirt. The slide content is as follows:

Challenges and Problems in IT System

Challenges and problems in IT based on three main categories like human-centered factor, environmental factors and organizational factors:

Human-centered factors:

1. Lack of understanding of the needs of the users by designers.
2. Lack of information for the managers and users as they don't know exactly what they want and what their information needs are.
3. Lack of participation of the managers and users in system design.
4. Lack of understanding of the managers of software and information systems.
5. Lack of accuracy in the data collected.

The slide also features logos for IIT Kharagpur and NPTEL at the bottom.

Now, I be we are coming to towards the end of this lecture we are going to talk about the challenges and problems in IT systems. This is the first one we will we have classified into based on the certain factors. Let say human centered factors. See now you know because people are the one who are going to use the technology are going to handle the technology, then there are you know human centered you know certain factors of a challenges.

One is you know people might have lack of understanding on the needs of the users by the designers. There is sometimes you know designer has to understand what will be the right the

users expectations and needs are. If there is a you know inconsistent there incompatibility or there is a disconnection between as a designer what do I think the needs of the users and the user needs are absolutely different.

Then that will actually create a you know challenge of creating a system or a technology that can be used or does not use it effectively. And lack of information for managers and users as they do not know exactly what they want and what their information needs are. So, sometimes you know there is a lack of information for managers and users.

So, then can be lack of participation of the managers and users in system design. They are not been actively involved in the you know design system, then lack of understanding of the managers of software information system and of course, lack of accuracy in data collected. So, these are all certain human centered factors which create challenges in the you know information systems information technology system in an workplace.

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The slide is titled "Challenges and Problems in IT System" and lists four environmental factors. A presenter is visible in the bottom right corner of the slide frame.

Challenges and Problems in IT System

Environmental factors:

1. Lack of procedures and methodology and stages of creating the system.
2. Lack of suitable consultants for designing the system and software.
3. Lack of evaluation of environmental aspects in management information systems.
4. Lack of serious consideration and adequate investment in this regard.

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Then comes the environmental factors. Now what are these environmental you know challenges are? You know maybe lack of procedures and methodology and stages in creating the system or maybe lack of suitable consultants for designing the system and software and maybe lack of evaluation of environmental aspects in management of information system.

Meaning that you are not actually evaluated did a better environment analysis when you are creating the information system, that is also a possible challenge. Then lack of serious consideration and adequate investment in this regard.

Because you know it requires a lot of investment or a cost, if you remember in the second sections of this particular lecture, we discussed about a cost incurred to developing managing

this IT information system it is a challenge. This is again a challenge with respect to environmental factors.

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Challenges and Problems in IT System

Organizational factors:

1. Lack of good conditions for participation and collaboration of the managers, users, and system directors.
2. Lack of existing systems and methods analysis before the system design.
3. The lack of evaluation of the existing power.
4. Bad condition of educating the specialized forces.
5. Unsuitable implementation of the system.
6. Inadequate education of the users.
7. Inadequate and incomplete documentation.

Technology Adoption

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Then comes the organizational factors. What are those organizational factors that is you know creates a challenge and problems in an IT systems? What is the lack of good conditions? You do not have a good condition for participation and collaboration for the managers and users and system directors, you need to organization has to create a better system if not so then it will definitely create a lot of challenge where a better usage of this IT systems.

And lack of existing system and methods analysis before the system design. And then lack of evaluation of the existing power and bad condition of educating the specialized forces and unsuitable implementation of the system. Probably you are using the system which are you know not relevant actually.

And inadequate education of the users, let us say organization implement the technology you need to actually train your users; meaning that I am talking about you know departments or employees each of the employees who are going to use the technologies for the organizational functioning.

You know if you do not educate them of course, then you cannot effectively use the technology right, this is the most often a problem where we are talking about know major challenge becoming a technology adoption so, technology adoption among the employees, right.

When an organization introduce a technology how far they created an awareness and they created you know inclination towards use of this technology. So, lot of research happens around this technology adoptions model where how do we make your employees effectively use the technologies. And of course, another major challenge become inadequate and incomplete documentations also a lot of challenge in an IT systems, ok.

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Benefits of IT in Management

- Organization efficiency as technology has traditionally helped workers to be more productive with it than without it.
- Enterprise resource management enterprise relationship management, and enterprise records management.
- Business network administering remote access. Computer hardware engineers design hardware and configure machines in ways that optimize them for their specific function.

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Of course, the benefits we discussed in length already.

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So, I have I am not discussing again because we discussed in length about what are the benefits.

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CONCLUSION

This lecture session has covered the concept of IT, IT&IS, importance, related issues of IT, elements of IT, pillars of IT, few examples of IT, recent trends of IT, job roles in IT, IT infrastructure ecosystem, challenges and problem of IT, benefits of IT. Hope the learners will be benefited from this discussion all about IT.

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And in today's lecture what did we essentially discussed is that now we were actually given a basis to a certain understanding the concepts of IT Information Technology and Information System and we discussed about what are the key elements and pillars of information technology.

And we also talked about certain examples and certain challenges in information technology. And of course, we discussed about recent trends it is very brief. Because most of you come from different disciplines and you know we do not want since this course is not essentially to talk about what are the trends in IT, but we are just introducing it so that you will able to understand how this information technology is been understood with respect to what design and structural aspect of an organizations.

And then of course, we discussed on the challenges and problems in categorized into human centered factors and environmental factors in the organizational factors. So, we are going to see in the next lecture about how this IT has been related to the organizational structure. So, we will see how this integration part happens where the information technology and you know structure interacts. We are looking forward to see you all in the next lecture.