Unit 10: Thriving in a new economy

Digital Economy

- Refers to an economy that is based on digital computing technologies.

- Also known as *Internet Economy*, the *New Economy*, or *Web Economy*.

- Internet economy is made up of companies directly generating all or some part of their revenues from Internet or Internet-related products and services

- The confluence of two forces has created the Internet Economy- the Globalization of business and the Networking of information technology.

- It is widely accepted that the growth of the digital economy has widespread impact on the whole economy.

Digital Economy - Components

- E-business infrastructure
  - hardware, software, telecoms, networks, human capital, etc

- E-business
  - how business is conducted, any process that an organization conducts over computer-mediated networks

- E-commerce
  - Transfer of goods physically after order is made
  - Involves payment of the goods too

Digital Economy - Components

- **Intellectual property rights**
  - Attempts to prevent illegal and immoral practices, like cyber bullying, theft, piracy, etc
- **Emerging technologies**
  - RFID, EDI, ERP, Cloud computing, NFC, etc
- **Policy and regulation**
  - Applying to telecommunications, antitrust, monopoly reduction, competition, etc
- **Government**
  - sustaining infrastructure development
  - governments as early adopters of digital practices provide leadership that other organisations and individuals can emulate.
- **Telecommunication industry**
  - Provides infrastructures

Twelve themes of the new economy

- 1. Knowledge
- 2.Digitization
- 3.Virtualization
- 4.Molecularization
- 5.Integration / Internetworking
- 6.Disintermediation
- 7.Convergence
- 8.Innovation
- 9.Prosumption
- 10.Immediacy
- 11.Globalization
- 12.Discordance

1. Knowledge

- knowledge is created by knowledge workers and by knowledge customers

- Information Technology enables an economy based on knowledge

- Rise of Artificial Intelligence (AI) and other knowledge technologies

2. Digitization

- Information can be represented as either 1 or 0
- Bits could be used to represent more and more types of information, such as graphs and photographs

- Vast amounts of information can be squeezed or compressed and transmitted at the speed of light.

3. Virtualization

- Physical things can be become virtual changing the metabolism of the economy
- Virtual ballot box, Virtual bulletin board, Virtual business park, Virtual job, Virtual Reality ,virtual classrooms

4. Molecularization

- The old corporation is being disaggregated
- Replaced by dynamic molecules and clusters of individuals and entities that form the basis of economic activity
- Mass becomes molecular (based on the individual) in all aspects of economic and social life
- Mass media -> Molecular
- Mass production -> Molecular

5. Integration / Internetworking

- Integration molecules into clusters that network with others for the creation of wealth
- Internetworked Enterprise
- Style of networking from host computer

6. Disintermediation

- Middleman functions between producers and consumers are being eliminated through digital networks; e-commerce

- Changing the single pattern

- For instance: Musicians and their producers won't need recording companies, retail outlets, or broadcasters when their music becomes a database entry on the Net.

7. Convergence

- Products of the convergence of the computing, communications, and content industries

- Eg. Youtube
  - Content
  - Computing
  - communications

8. Innovation

- **"Obsolete your own products"**

- For example; Microsoft technologist Ken Nickerson is proud to say that it was Microsoft (with Windows 95) that succeeded in making obsolete the best-selling software of all time, Microsoft's own DOS.

9. Prosumption

- Producers must create specific product that reflect the requirements and tastes of individual customers.
- Consumers are involved in the actual production process

- The gap between consumers and producers blurs
- Mass production is replaced by mass customization

10. Immediacy

- The new enterprise is a real time enterprise, which is continuously and immediately adjusting to changing business conditions through information immediacy

- For instance;
  - Electronic Data Interchange (EDI) – linking computer systems between suppliers and their customers for purchase orders, invoices, billing, and record keeping, companies can save considerably over manual (non digital) methods

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11. Globalization

- Driving the extension of technology

- To meet the demand of global consumers

- Global business need to be able to link with customers, suppliers, employees, and partners throughout the world

- Boundary-less firms, global organization etc.

12. Discordance

- Unpredicted social issues such as; privacy, access, quality of work life, quality of life etc. are beginning to arise

- The nature of work and the requirements of the workforce in the digital economy are fundamentally different

- The concept of labor is undergoing a radical redefinition

- The new economy is bringing high-paid, high-value jobs, but there is little job mobility between old and new

The ten technology shift

- 1.From Analog to Digital
- 2.From Traditional semi-conductor to Microprocessor Technology
- 3.From Host to client / server computing
- 4.From Garden Path Bandwidth to Information Gateway
- 5.From Dumb Access Device to Information Application
- 6.From separate data, text, voice and image to multi-media
- 7.From Proprietary to open system
- 8.From Dumb to Intelligent Network
- 9.From Craft to Object Computing
- 10.From GUI's to MUIs, MOLEs, MUDs, MODs, AVATARs and VR (Virtual

1. From Analog to Digital

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- Digitization turns analog waves into a version of Morse codes consisting of dots and dashes or of ones and zeroes.

- Started in 2002, when the world began storing more information in digital than in analog format.

- In 2000, three-quarters of the world's information was still in analog form. By 2007, all but 6 percent had been preserved digitally

2. From Traditional semi-conductor to Microprocessor Technology

- Microprocessor advancement began in 1968 with the formation of Intel Corporation in Mountain View, California.

- The first single chip microprocessor, Intel 4004 was developed in 1971.

3. From Host to client / server computing

- Host:
  - Any end device in a network.
  - Can either be a server, a client or both.
- Server: A computer that has software that enables it to receive requests from a client and provide required services e.g. email.
- Host computing:
  - The master-and-slave relationship of terminals connected to host computers.
- Client/server computing:
  - Business units work together in well-structured enterprises.
  - Distributed computing on networked systems.

4. From Garden Path Bandwidth to Information Gateway

- If a plain old telephone service (POTS) is a garden path (in terms of how much information it is able to carry) then the emerging technologies are equivalent to superhighways 1 mile and 16 miles wide respectively, an incredible advance in information-carrying capacity.

5. From Dumb Access Device to Information Application

- 'Dumb' access devices (like television) are becoming interactive, and thus more useful as 'information appliances.

- ⬜One can record, program, and view it at your convenience.

- ⬜The Internet has also allowed companies, such as Amazon.com, to learn a great deal about their customers

6. From separate data, text, voice and image to multi-media

- Rather than have separate software programs and files for each information format, the emerging technology will enable multimedia communications and interactions to take place as a matter of routine.

- Technologies that used to work as separate technologies now share resources and interact with each other synergistically

7. From Proprietary to open system

- In 1984 Richard Stallman developed the 'free software'- software which could be copied by others and made changes too as they pleased.

- Higher chances of innovation and development of the software in OSS.

- One of the most famous and successful open source software projects is Linux.

8. From Dumb to Intelligent Network

- In1997, David Isenberg, then an AT&T researcher, published an article called Rise of the Stupid Network.

- Concept of intelligent network with intelligent end-points is highly emerging.

- Data retrieval are done by specialized software programs called 'information agents rather than by searching for information by using single purpose search procedures ('dumb' networks).

9. From Craft to Object Computing

- Chunks of software are created instead of creating large and complex software programs.

- Enables the rapid assembly of software rather than its laborious crafting.

- Easy to maintain and modify existing code as new objects can be created with small differences to existing ones.

10. From GUI's to MUIs, MOLEs, MUDs, AVATARs and VR

- The standard graphic user interface (GUI) enabled a point-and-click-on-icons type of user interface.

- Replaced by much more compelling and flexible technologies - called multimedia user interfaces (MUIs), multi-user domains (MUDs), and just plain virtual reality (VR).

The Internet Economy and its indicators

- Layer 4: Internet Commerce

- Layer 3: Internet Intermediary

- Layer 2: Internet and Network Applications Infrastructure

- Layer 1: Internet Infrastructure

- **Layers 1 and 2 are infrastructural and 3 and 4 are economic activity oriented**

Internet Economy Indicators

Layer 4: Online Transaction

Layer 3: Intermediaries

Economic Activity

Layer 2: Application

Infrastructure

Layer 1: Internet Infrastructure
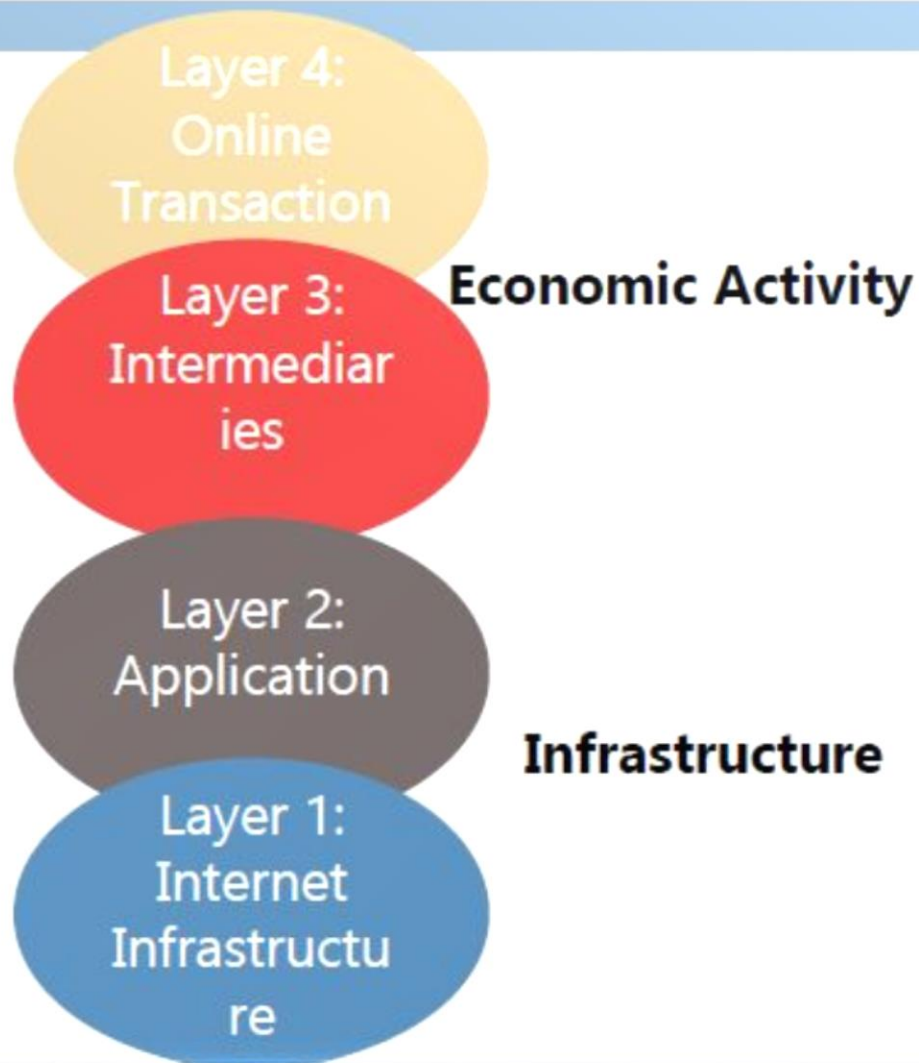
Layer 1: Internet Infrastructure

- **Companies that manufacture or provide products and services that make up the Internet network infrastructure includes:**
  - Internet backbone providers
  - Internet service providers
  - Networking hardware and software companies
  - PC and Server manufacturers

Layer 2: Internet and Network Applications

- **Infrastructure Companies that manufacture or provide products and services necessary to carry out all activities in the digital market includes:**
  - Internet consultants
  - Web server software and other Internet applications
  - Multimedia applications
  - Web development software
  - Search engine software
  - Online training

Layer 3: Internet Intermediary

- **Companies that increase the efficiency of electronic markets by facilitating the meeting and interaction of buyers and sellers via the World Wide Web and Internet includes:**

  - Market makers in vertical industries
  - Online travel agents
  - Online brokerages
  - Content aggregators
  - Portals/Content providers
  - Internet ad brokers

Layer 4: Internet Commerce

- Companies that generate product and service sales to consumers or businesses over the Internet and World Wide Web.
  - Online product sales
  - Fee/subscription-based companies
  - Online advertising
  - Online travel providers

Benefits of E-commerce

- Benefits to organizations
  - Global reach
  - Cost reduction
  - Improved customer relation

- Benefits to consumers
  - More product and services
  - Information availability
  - Cheaper products and services