# The 'ICT Revolution' and the Information Economy

CHAPTER 3

# Introduction

- There are **two** changes that have been pointed out because of their roles in the current transformation:
  - The changing nature of the economy.
  - The rapid development and distribution of ICTs,
- There is no doubt that ***ICTs in general*** and the ***Internet in particular are facilitating the changing*** in the structures and operations of businesses.
- This chapter highlights some of the critical issues in these two broad areas, which provide the essential for e-Business.

# The ICT Revolution: Convergence between Computing and Telecommunication



- The ICT Revolution has been associated to several factors. These factors are:
- *Network connectivity*
  - The network connectivity represent the heart part of ICT Revolution.
  - The convergence between the computing perspective in workplaces technology and telecommunications,
  - The computers can enable to communicate with other devices and computers over space.
  - People can connected with computers as part of their work and normal activities of their life.

# The ICT Revolution: Convergence between Computing and Telecommunication

- With the rapid development and diffusion of Internet infrastructure and technologies,
  - The network has become as one of main online market place and e-transactions.
  - The connections between computers at different levels and between businesses & consumers that have many steps which is required human actions and paperwork previously.
- For this reasons, new opportunities for efficiency have important implications for ***how business is organized and conducted***.
- The transformation is also to provide to both private and public sector, and provide public services that are needed in our live.

# The ICT Revolution: Convergence between Computing and Telecommunication



- *Moore's Law: exploding capacity and shrinking price*
- Another critical development the ICT Revolution is the **rapid and continuous cost reduction** in the use of computers and telecommunications, because of increasing the online processing and transmission capacity.
- In **1965, Gordon Moore** who is Intel founder, expected that the number of transistors will be ***double*** every 18-24 months.

# The ICT Revolution: Convergence between Computing and Telecommunication



- In the same idea, Gilder expected the future of total bandwidth of telecommunication systems will be ***triple*** every 12 months.
- The rapid increase in capacity and reduction in price in computing and telecommunications have resulted in what is sometimes known as **'inverted pricing'**,
  - The **inverted pricing** can be defined is paying extra rate to improved device performance, so the same amount will be paid regularly to improve computers powerful and telecommunications higher quality over time.

# The ICT Revolution: Convergence between Computing and Telecommunication



- That is important because of the main developments have influence to reduce the prices of using computing and telecommunications,
- People, companies, and organization can gain and use the computer and telecommunication technologies.
- This trend has led to other important aspects in recent years, e.g. **Utility computing.**

# The ICT Revolution: Convergence between Computing and Telecommunication



- A computing organization has hundreds of process that can be achieved through computing functions.
- Utility computing allows an organization to look at all those functions in terms of computing power uses.
- The computing power can be bought for entire company process instead of having computer department in each departments.

# The ICT Revolution: Convergence between Computing and Telecommunication



Heavy investment by private and public sector

- It is clear that today IT represents one of the largest expenditure by American, Europe , Far East, and developed companies.
- More than 1$ trillion is spent in worldwide on IT include hardware, software, and services.
- With telecommunication the number will increase to up to 2$ trillion.

# The ICT Revolution: Convergence between Computing and Telecommunication



- The number of Internet users has exploded since the mid-1990s.
- Today, there are well over **two billion** of Internet users in the world, and more and more people from developing countries are joining the Internet via mobile devices.
- Also, the businesses, governments and all other types of organizations are getting connected to the high Internet speeds.

# The ICT Revolution: Convergence between Computing and Telecommunication



- The issue today is no longer simply getting connected to the Internet. The main purpose is focusing to increase smart deployment of the technologies to full potential and deliver real value to stakeholders.

# The Information Economy

- **The ICT Revolution would have been far *less significant* if the nature of the *economy* had not changed in parallel.**
- **Today, the information has become the most *critical strategic resource* upon which the competitiveness and future development of any organization.**

# The Information Economy

- The concept of the information economy has been used for decades.
- What is the different in this time:
  - scale and speed of information creation, editing publishing, distribution, and deployment have reached a scale unimaginable before.
  - Also, this ability is still growing sharply.

# The Information Economy

- The growth of the information economy has been *defined in relation to several processes*, and it is in these key processes are roles of ICTs which are:
  - First, information is coming to main stage of product resource and delivery of goods and services in all sectors of the economy.
  - Second, This economic transformation is depending on the technological convergence of telecommunications and computers.
  - Third, ICTs are facilitating the growth of the information trade sector in the economy.
  - Finally, the possibility to integrate between information and economy to create the global and regional market-place.

# The Information Economy

- The crucial characteristic of the information economy is that information has become the **strategic resource** upon which the competitiveness of all firms depends. That means the economy has been transformed from an i**ndustrial economy to an information economy** with several fundamental new characteristics.

# The Information Economy

***There is some real-life examples of Information Economy:***

- **Estimated the information labor in most developed countries is over %60, including manufacturing field.**
- **In a modern company today, %70-80 can be systematic through e-system.**

# The Information Economy

- Manufacturing competitively today depends critically on utilizing ICTs through many different aspects such as:
  - Manage logistics and supply chains.
  - Design and produce superior products.
  - Provide efficient and high-quality service support.
  - Communicate efficiently internally and externally with suppliers and consumers.

# The Information Economy

- The significance of the using information in the economy field is reflected to the comparison between the stock market capitalization of a company and what the physical assets they have.
- Depending on the stock market sector, it is commend that the stock market value of particular company is several times the physical assets.
- Today, the market value of e-Bay is worth more than McDonald's; Microsoft is worth more than the three major car manufacturers in the USA that are put together.

# The Information Economy

- The irony is that even today, many organizations and business executives still spend most of their time and effort to ensure the tangible assets are fully and efficiently utilized, while leaving the intangibles to sort themselves out.
- For many organizations, their employees' skills, organizational culture, and brands are worth far more than their tangible assets.
- More importantly, sustainable competitive advantages often depend on such intangibles because they are difficult for competitors to imitate.

# The Information Economy

- The sad truth is that most existing organization, management theories, techniques, and management efforts are use towards managing to utilize of tangible assets.
- Adding more intangible elements: new design, new image, new features. to attract the interested customers rather than surpasses them through actual cost of producing.
- Today it is clear that known an information about money is more valuable than money itself; and information about products or services is worth more than the underlying offering

# The Information Economy

- Today, it is generally accepted that we are living in a knowledge-based, information economy. The most developed economies are information workers, more than %50 of the gross *national product* is bound the information activities, and over % 50 of products and services is made up of information content.
- Most of all, the most of products and services in the future will come from intangible field rather than tangle field ,

# The Real New Economy

- McKinsey Global Institute studied labor productivity and its associated to IT spending in USA, Germany and France. They conclude some idea:
  - New economy did appear in the 1990s.
  - They found new economy emerged the competition which lead to growth of managerial innovations.
  - The role of IT is more complicated and its main purpose is facilitate other business such as industries and individual companies
- However, the relationship between IT investment and productivity gains is not straight forward, and the study found little direct correlation between them.

# The Real New Economy

- Most of industries invested in IT, but the rates of productivity growth varied extremely.
- In the USA, productivity gains were concentrated in six sectors, retailing, securities, brokerage, wholesaling, semiconductors, computer assembly and telecommunications.
- Many other sectors also invested in IT but saw very little productivity growth, such as hotels and television broadcasting.
- It was innovations in products, business practices and using technologies smartly led to gains in productivity.

# The Real New Economy

- The implications are very significant. The companies must invest in IT field as key factors to impact on their productivity, rather than simply following broad IT trends.
- Also, sequence and timing of their investment are very important, because the benefits of certain critical IT investments can be realized if the investment is used in right place and right time of IT applications.
- Most of successful companies follow managerial innovations such as technological practices that can be integrated to managerial practices.

# Extracting the Business value of ICTs: from Deployment to Usage

- Despite ICTs' enormous potential, many organizations have failed to extract the expected business value from their ICT investments.
- Many of business-oriented ICT projects have not lived up to expectations.
- Blame is often shared between the CEO and CIO.
- Despite of discussions about the managers who have lack the technical experience, and the ICT experts have lack in the management skills, so gap does not seem to be getting narrower.

# Extracting the Business value of ICTs: from Deployment to Usage

- There is a huge gap between what the ICT industry promises and industries field which could lead to competitive advantage in industries and companies.
- Many business executives know that their companies must spend on ICTs, but they want to invest no more than is **necessary** to keep up with competitors.
- This mentality lead to why the ICT people in companies is under continuous pressure to reduce costs and deploy standardized systems and processes.

# Extracting the Business value of ICTs: from Deployment to Usage

- The ICTs are equally available to all firms, so the ICTs services are now a utility just like electricity and water. IT directors and business executives from the ICT industries - served only to fan firms.
- However, during the past decade, ICT investments lead the companies to increase productivity and price competition in many industries.
- The chief beneficiaries of ICT have been customers who have been able to buy more products and services from companies that have less investment.

# Extracting the Business value of ICTs: from Deployment to Usage

- If ICTs are products that can be sell or buy, then it should be presented as economically and efficiently as possible.
- For most business managers, the actual usage of information and ICTs in their companies is a 'black hole', consuming human energy, time, attention and resources, but the business value is rarely because they are not fully understood what they want.

# Extracting the Business value of ICTs: from Deployment to Usage

- It is important to be considered that many business managers do not see clearly of the ICT investments have to be accompanied by significant behavioral and cultural changes to use and accept the ICT information such as sales, marketing and servicing.
- The soft factors of how people behave with information and use ICTs have not been measured very well, or managed effectively with interring the information systems. That leads to business disappointments over the results obtained from major ICT investments and deployments.

# Extracting the Business value of ICTs: from Deployment to Usage

- ***Marchand*** argued that **only 20-25 %** of the business value of ICTs is linked to **deployment and investments**, whereas **75-80 %** of the business value of ICTs and information is linked to **soft factors**.
- However, most managers devote % 90 to working in **deployment and investments** part that have less value.
- To achieve the full value of ICTs, we need to use strategic and organizational changes, and mental and behavior of managers and employees to get valuable investment in ICT field.

# Capital Vs. Talent: the battle that is reshaping business

- in July 2003, Martin and Moldoveanu argued that for a century, capital fought labor for the biggest share of profits. Now knowledge workers have gone to war with investors, and **the outcome remains unclear today.**
- They argued that the benefit of knowledge-based economy, is **product** of knowledge and information.
- Companies cannot generate profits without ideas, skills, and talent of knowledge workers, so they have to depend on people first and then depend on technologies will help to achieve their goals.

# Capital Vs. Talent: the battle that is reshaping business

- One of the main issues is how the companies can fined valuable workers and talented individuals, because of future business depend on them fundamentally.
- Some of the major talents are worth huge profits such as film stars, pop singers, and sports.
- There is shortage and high demand in the top talents in any fields and they can extract more value and returns for their talents from technology and information distribution.

# Business Implications

- There is little doubt that the nature of the economy has changed as
  - Measured by the informational (intangible) elements of our products/services.
  - Production processes.
  - The workforce who their primary activities are informational rather than physical **(they represent over %50 in developed countries).**

# Business Implications

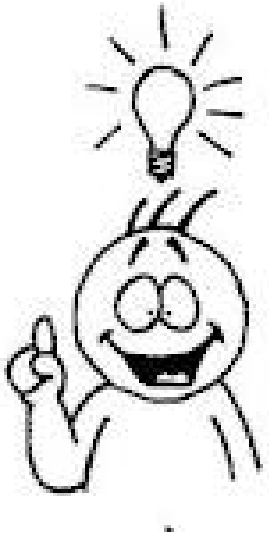
- Information (or knowledge, intelligence etc.) has become one of main resource upon which the efficiency and competitiveness of all organizations (Private – Public) sector depend.
- In the meantime, the 'ICT Revolution' continues to providing us with increasingly powerful and affordable tools, to be implemented in infrastructure of other business fields.
- The transformation to an information economy has resulted in a rapid expansion of demand for ICT products and services quickly in industrial fields.

# Business Implications

- It is valuable for shift the recourses of world economy from materials and capital to information. At the same time there are tools to deal with the most important resource of the economy (i.e. information),
- This means that large and small organizations can to many things differently in order to survive and thrive in new version of new economy.

# Business Implications

- This intention the people to new generation of organization and management theories. These theories should be embedded in the new economics of information and should use with unique capabilities of ICTs.
- These studies and theories should concentrate on '**strategic and organizational innovations**'
- These changes provide the essential context for e-business and online purchasing.



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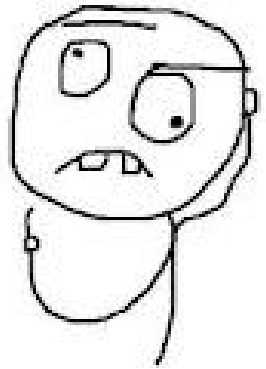

# Any Questions