MODULE 3

ELECTRONIC BUSINESS & CLOUD COMPUTING

OUTLINES

- The Internet: new information technology infrastructure for the Digital Firm.
- Internet platforms
- The use of electronic business and electronic commerce
- Technologies used for electronic business and electronic business models
- Characteristics of cloud computing
- Infrastructure, platform and application (software service) layers of the cloud pyramid
- Private and Public clouds
- Service Level Agreements (SLAs) for Cloud-based IT resources

The Internet

Internet: The Internet is the acronym for international networks. It is a global system of interconnected computer networks that use the Transmission Control Protocol/ Internet Protocol (**TCP/IP**) to serve billions of users worldwide. It is a *network of networks* that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic and optical networking technologies.

Intranet: 'Intra' connotes within, while net is a short form of network. Therefore, Intranet refers to a less extensive network system, as it does not involve the outside or external or external connectivity. By way of definition, an intranet could be said to be a kind of network that is privately owned and which like the internet, makes use of transmission control protocols (TCP)/Internet Protocols (IP), but for internal use and not for the public.

Extranet: The Extranet is similar to the intranet in that it provides for the exchange of ideas, data and information with reference to a particular organization, but contrary to the Intranet, it communicates these to external users. Therefore, an extranet can be defined as a private network that uses the Internet protocols and the public telecommunication system to share the information, data and operations of a business with users outside the business such as vendors, suppliers or customers.

The Internet...cont

Www: Of all the services available to all on the net, the most popular is the **World Wide Web (www)** or simply, the Web. The **Web** is a type of data service operating on the Internet, which allows you to view texts and graphics on the internet. The Internet is not the World Wide Web. They are two different, but intertwined things.

E-mail: The **Electronic mail** (**e-mail**) or **internet mail** is one of the oldest and still most useful internet service today, as literary millions of messages are exchanged on daily basis all over the world via e-mails. It is also known as a **simple mail transfer protocol**.

Nature and Characteristics of Internet and Intranet

Internet

Network Nature: The Internet is a network, which is made up of many other networks.

Extensibility: It is extremely extensive as it functions globally; it has a very high coverage.

Decentralization: Functionally, the Internet is decentralized by design as each Internet computer otherwise known, as the host is independent.

Independence: Users of the Internet decide what Internet service to use and which local service to make available to the worldwide Internet community.

The Internet...cont

Accessibility: The Internet is easily accessible through different means such as:

1. On line services e.g. America Online

2. Commercial Internet Service Providers (ISP)

Informative: Interactive documents can also be obtained through the Internet. Therefore, it provides a means for information sharing and retrieval.

Functions: The Internet provides a variety of functions as it consists of many parts e.g. the Worldwide Web (www), electronic mail (e-mail).

Intranet

Network Nature: The Intranet is a network, which is made up of many other networks.

Extensibility: It is extensive as it functions but not as the internet; its coverage is confined within an organization.

Centralized/Independence: Functionally, the intranet is centralized by design.

Accessibility: The Intranet is easily accessible within the organization where it is being used.

Informative: Interactive documents can also be obtained through the intranet. Therefore, it provides a means for information sharing and retrieval.

Functions: The intranet provides a variety of functions as it consists of many parts e.g. electronic mail (e-mail) can be used within the organization.

Internet Platforms

Internet platforms overlap with, and must relate to, the firm's general networking infrastructure and hardware and software platforms. U.S. firms spent an estimated $40 billion annually on Internet-related infrastructure. These expenditures were for hardware, software, and management services to support a firm's Web site, including Web hosting services, routers, and cabling or wireless equipment. A **Web hosting service** maintains a large Web server, or series of servers, and provides fee-paying subscribers with space to maintain their Web sites.

The Internet revolution created a veritable explosion in server computers, with many firms collecting thousands of small servers to run their Internet operations. Since then there has been a steady push toward server consolidation, reducing the number of server computers by increasing the size and power of each. The Internet hardware server market has become increasingly concentrated in the hands of IBM, Dell, and HP/Compaq, as prices have fallen dramatically.

The major Web software application development tools and suites are supplied by Microsoft (Microsoft Expression Web, SharePoint Designer, and the Microsoft .NET family of development tools); Oracle-Sun (Sun's Java is the most widely used tool for developing interactive Web applications on both the server and client sides); and a host of independent software developers, including Adobe (Flash and text tools like Acrobat), and Real Media (media software).

The Use Of Electronic Business And Electronic Commerce

E-BUSINESS, E-COMMERCE, AND E-GOVERNMENT

The information systems and technologies are transforming firms' relationships with customers, employees, suppliers, and logistic partners into digital relationships using networks and the Internet. So much business is now enabled by or based upon digital networks that we use the terms "electronic business" and "electronic commerce" frequently throughout this text.

Electronic business, or **e-business**, refers to the use of digital technology and the Internet to execute the major business processes in the enterprise. E-business includes activities for the internal management of the firm and for coordination with suppliers and other business partners. It also includes **electronic commerce**, or **e-commerce**.

- ***E-commerce*** is the part of e-business that deals with the buying and selling of goods and services over the Internet. It also encompasses activities supporting those market transactions, such as advertising, marketing, customer support, security, delivery, and payment.

The use of Electronic Business and Electronic Commerce… cont

The technologies associated with e-business have also brought about similar changes in the public sector. Governments on all levels are using Internet technology to deliver information and services to citizens, employees, and businesses with which they work.

- **E-government** refers to the application of the Internet and networking technologies to digitally enable government and public sector agencies' relationships with citizens, businesses, and other arms of government.

  In addition to improving delivery of government services, e-government makes government operations more efficient and also empowers citizens by giving them easier access to information and the ability to network electronically with other citizens. For example, citizens in some states can renew their driver's licenses or apply for unemployment benefits online, and the Internet has become a powerful tool for instantly mobilizing interest groups for political action and fund-raising.

The use of Electronic Business and Electronic Commerce... cont

e-Commerce Relationships:

* Business-to-Business (B2B) – is used to refer to companies whose customers are other businesses

* Business-to-Consumer (B2C) – is the e-Commerce where the company's customers are individuals who buy or transact business directly with it.

* Business-to-Government (B2G) – is government departments setting up their website to directly reach the common citizen.

E-Business Enabling Software

* **Supply Chain Management (SCM):** is the supply chain software which are tools or modules used in executing supply chain transactions, managing supplier relationships and controlling associated business processes. It integrates supply and demand management within and across companies automating the process of planning and management of all activates involved ion sourcing, procurement, conversion, and logistics management activities.

* **Customer Relationship Management (CRM):** consists of the processes a company uses to track and organize its contacts with its current and prospective customers.

It is used to support these processes; information about customers and customer interactions can be entered, stored and accessed by employees in different company departments. It involves the use of technology in attracting new and profitable customers, while forming tighter bonds with existing ones.

CRM includes: Front office operations (face-to-face meetings, phone calls, e-mails etc); Back office operations (billing, maintenance, planning, marketing, finance etc.); Business relationships (interaction with other companies and partners e.g. suppliers, vendors etc); Analysis (market share, number and types of customers, revenue etc).

- **Sales Force Automation (SFA):** are information systems used in marketing and management that help automate some sales and sales force management functions. It is often called CRM systems. It automatically records all the stages in a sales process.

- **Human Resources Management (HRM):** Also called HR Information System, HR Technology, or HR Modules refers to the systems and processes that combine both human resources management (HRM) and IT.

- **Asset Management:** Is an integrated software solution that works with all departments that are involved in the procurement, deployment, management and expense reporting of IT assets.

Cloud Computing

Cloud computing is the atmosphere in which firms and individuals obtain computer processing, storage, software, and other services as a pool of virtualized resources over a network, primarily the Internet. These resources are made available to users, based on their needs, irrespective of their physical location or the location of the users themselves.

Cloud computing refers to a recent trend in Information Technology (IT) that moves computing and data away from desktop and portable PCs into large data centres. The Cloud computing (or hosted services) take away the headaches associated with managing IT systems and can help automate document-based processes, so that customers can focus on growing and knowing their businesses. The hosted services are the cloud computing product, upon which customers can access their e-mail, data and applications safely and securely, in the Microsoft Windows or any other environment, they are familiar with.

The big players in cloud computing are currently:

- Google – with Google Apps
- Microsoft – with Online services
- Amazon – with Amazon Elastic Compute Cloud (EC2)

<u>Characteristics of Cloud Computing</u>

• **On-demand self-service:** Individuals can obtain computing capabilities such as server time or network storage on their own.

• **Ubiquitous network access:** Individuals can use standard network and Internet devices, including mobile platforms, to access cloud resources.

• **Location independent resource pooling:** Computing resources are pooled to serve multiple users, with different virtual resources dynamically assigned according to user demand. The user generally does not know where the computing resources are located.

• **Rapid elasticity:** Computing resources can be rapidly provisioned, increased, or decreased to meet changing user demand.

• **Measured service:** Charges for cloud resources are based on amount of resources actually used.

<u>Benefits of Cloud Computing</u>

▫ Clients would be able to access their applications and data from anywhere at any time.

▫ It could bring hardware costs down.

Cloud Computing… cont

▫ It gives organizations company-wide access to computer applications without buying a set of software or software licenses for every employee.

▫ It gives companies that rent physical space to store servers and databases the option of storing data on someone else's hardware, removing the need for physical space on the front end.

▫ Companies will save money on IT support, etc. etc.

Cloud computing types of services

• **Cloud infrastructure as a service:** Customers use processing, storage, networking, and other computing resources from cloud service providers to run their information systems. For example, Amazon uses the spare capacity of its IT infrastructure to provide a broadly based cloud environment selling IT infrastructure services. These include its Simple Storage Service (S3) for storing customers' data and its Elastic Compute Cloud (EC2) service for running their applications. Users pay only for the amount of computing and storage capacity they actually use.

• **Cloud platform as a service:** Customers use infrastructure and programming tools hosted by the service provider to develop their own applications.

Cloud Computing… cont

For example, IBM offers a Smart Business Application Development & Test service for software development and testing on the IBM Cloud. Another example is Salesforce.com's Force.com, described in the chapter-ending case study, which allows developers to build applications that are hosted on its servers as a service.

• **Cloud software as a service:** Customers use software hosted by the vendor on the vendor's hardware and delivered over a network. Leading examples are Google Apps, which provides common business applications online and Salesforce.com, which also leases CRM and related software services over the Internet. Both charge users an annual subscription fee, although Google Apps also has a pared-down free version. Users access these applications from a Web browser, and the data and software are maintained on the providers' remote servers.

Private and Public Cloud

A cloud can be private or public.

A **public cloud** is maintained by an external service provider, such as Amazon Web Services, accessed through the Internet, and available to the general public.

A **private cloud** is a proprietary network or a data center that ties together servers, storage, networks, data, and applications as a set of virtualized services that are shared by users inside a company. Like public clouds, private clouds are able to allocate storage, computing power, or other resources seamlessly to provide computing resources on an as-needed basis. Financial institutions and health care providers are likely to gravitate toward private clouds because these organizations handle so much sensitive financial and personal data.

Service Level Agreements (SLAs) for Cloud-based IT Resources

Service Level Agreement (SLA).

The SLA is a formal contract between customers and their service providers that defines the specific responsibilities of the service provider and the level of service expected by the customer. SLAs typically specify the nature and level of services provided, criteria for performance measurement, support options, provisions for security and disaster recovery, hardware and software ownership and upgrades, customer support, billing, and conditions for terminating the agreement.

Review Questions

- How has Internet technology changed value propositions and business models?

- What is electronic commerce? How has electronic commerce changed consumer retailing and business-to-business transactions?

- What are the principal payment systems for electronic commerce?

- How can Internet technology facilitate management and coordination of internal and inter-organizational business processes?

- What are the major managerial and organizational challenges posed by electronic business and electronic commerce?

- What is IT infrastructure and what are its components?

- Security isn't simply a technology issue, it's a business issue. Discuss.

- Suppose your business had an e-commerce Web site where it sold goods and accepted credit card payments. Discuss the major security threats to this Web site and their potential impact. What can be done to minimize these threats?

- Would you entrust your corporate systems to a cloud computing provider? Why or why not?

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