

CHAPTER 7:

- . **Convergence**: Phone & computer networks are merging into one digital network (like how WhatsApp let you call & send files)
- . **Broadband**: Most homes in the US have fast internet.
- . **Broadband wireless**: people now use wireless internet for voice & data communication. (like Wifi or 5G)

. **IT infrastructure** = physical device + software.

include firm-wide services: computing / it support / training / facility management.

. **Service platform**: More accurate view of value of investment (like paying for cloud storage monthly instead of buying big server)

. **Evolution of IT infrastructure**:

1) Mainframe Era (1959)

4) Enterprise Computing Era (1992)

2) Personal Computer Era (1981)

5) Cloud & Mobile Era (2000)

3) Client / Server Era (1983)

all of them until today.

. **Moor's law**: computer power doubles every 2 years, Nanotechnology (getting smaller & cheaper)

. **law of Mass Digital Storage**: the amount of data stored doubles every year.

. **Metcalf's law**: A network becomes more useful as more people join.

. **The Components of IT Infrastructure**:

- 1) Computer hardware platforms (computers/servers)
- 2) Operating system platform (software that runs the hardware)
- 3) Enterprise software apps (big software used by companies)
- 4) Data Management & storage (tools to store data)
- 5) Internet platforms (support websites)
- 6) Networking / telecommunications (wifi)
- 7) Consulting system integration services (setup & connect systems)

. **what's computer network?** two or more connected computers.

Key components: 1) Client & Servers (client = users / Servers = store data)

2) Network Interface card (NIC) (let computer connect to the network)

3) Connection medium (like cables or Wifi)

4) Network operating system (NOS) (controls the network)

5) Hubs/switches/Routers (device that manage traffic between computers)

6) Software defined networking (SDN) (controls network devices by central program)

Large companies Network: big companies have many small networks (LANs) that connect to one large network

1) Powerful Servers: they use servers for websites, internet, externets, and backend systems.

2) Mobile Wireless LANs (using your computer everywhere without wire or cable)

3) Videoconferencing system (system for online meetings like Zoom)

4) Telephone & mobile networks (office phones and mobile are part of the communication network)

Types of Network: Digital Vs. Analog computers use digital signals (0s & 1s), but phone use analog
A modem changes between them.

→ local area network (small network in office)

→ Wide area network (cities or countries)

→ Metropolitan Area Network (for city or large area)

→ Campus area network (Guest network)

What's internet? largest network in the world.

Internet Service providers (ISPs): give you access to the internet (like Stc or ooredoo)

Types of internet connections: 1) Dial-up: 56.6 Kbps (very slow)

2) Digital Subscriber line (DSL): 385 Kbps-100+ Mbps (faster)

3) Cable: 20-100 Mbps (also fast)

4) Satellite

5) T1/T3 lines: 1.54 Mbps / 45 Mbps (high speed)

IP address: every device on the internet has an IP address - unique number. (207.46.250.119)

The domain Name System (DNS): convert IP address into names. (google.com)

Internet Services & Communication tools:

1) Email (Gmail) 2) Chatting & instant messaging (Whatsapp) 3) World wide web (www)

4) File transfer protocol (transfer files between computers) 5) VPN (secure priv connection) 6) Newsgroup

7) Voice over IP (VoIP) (phone calls) 8) Unified communication (mix voice, video, email) 9) Telnet

Searching for information on the Web:

• Search engines (Google) • intelligent agent shopping (program compare prices)

• Mobile Search (search using your phone)

• Semantic & predictive search (Semantic = understand meanings / Predictive = tries to guess what you want)

• Visual search (search using image)

• Search engine marketing (paying to make your site show up on top)

• Search engine optimization (SEO) (improve your site so it ranks high for free)

CHAPTER 8:

• **Security**: using technology to stop people from entering the system, changing things, stealing data, or damage it.

• **controls**: steps or process we use to keep the information & system secure.

↳ include: 1/ management controls (policies & procedures)

2/ technical controls (passwords & monitoring)

3/ operational controls (how we fix the problem & handle changes)

• Wireless Network Threats:

– Wifi network have security problems that are easy to take advantage of.

– Radio signals used in Wifi easy to catch & listen to.

– Service set identifiers (SSIDs) are the name of Wifi network, they help identify the access points.

– Wireshark is a tool that can be used to capture data.

– War driving means someone drives around buildings to get into the network.

• **Malware**: bad softwares that can damage your computer or data.

↳ **Viruses**: program that attaches itself to other files or program. (when you open the file, the virus runs)

↳ **worms**: program that spreads by itself to other computers through a network.

↳ **Trojan horses**: looks like a good program, but it does something bad and not expected.

↳ **spyware**: small program install themselves secretly, watch what you do online & it shows ads.

↳ **Key loggers**: record everything you type on your keyboard (like passwords/serial numbers)

↳ **Ransomware**: locks your files and ask you to pay money to open them, or to stop pop-up message.

• **spoofing**: pretending to be someone else using fake email or website.

• **sniffer**: program that listens to information moving through network.

• **Identity theft**: stealing someone's personal info (like ID, credit card num) to pretend to be them.

• **Phishing**: sending fake emails or make fake website to trick people into giving their data.

• **pharming**: redirecting someone to a fake website even if they typed the correct address.

• **Denial of service attacks (DoS)**: sending thousands of fake request to crash the network.

• **Distributed denial of service attacks (DDoS)**: same but uses many computers at the same time.

• **Botnets**: network of infected computers (zombies) by bot malware.

2
• **Social Engineering**: tricking employees to give passwords or info by pretending to be someone they trust.

• **Hackers break into system for different reasons, their activities**:

1/ **System intrusion** (breaking into system)

3/ **System damage** (deleting or changing data)

2/ **theft of services** (using service without paying)

4/ **Cyber vandalism** (intentionally destroying)

• **Computer Crime**: crimes that use computer networks or devices to advance other ends.

• **Risk assessment**: try to find out what could go wrong & how bad it would be.

we look at: 1/ types of threat أنواع التهديدات

2/ probability during the year ارباح السنة

3/ potential losses, value of threat قيمة التهديد والخسارة

4/ expected annual loss الخسارة المتوقعة

• **Security policy**: explains the security goals to protect and how.

• **Identity management**: business process & technologies for identifying valid users of system. Create different roles of system users and access what they need. (an accountant can access finance files, but not HR data)

• **Disaster recovery planning**: develop plans to fix the system after a problem.

• **Business continuity planning**: focus on restoring business operations & keep it running after a disaster.

• **Authentication ways**: passwords/Tokens/smartcards/Biometric (fingerprints, irises, voices)

• **Fire wall**: hardware + software that prevents unauthorized access to network.

• **Intrusion detection systems (IDS)**: watches hot spots on corporate networks and reports suspicious activity.

• **Antivirus & Antispyware software**: check for known malware and removes it.

• **Encryptions**: transforming text or data into secret code so no one can read it.

↳ two methods: 1/ Secure Sockets layer (SSL)

2/ Secure Hypertext Transfer Protocol (S-HTTP)

CHAPTER 10:

التجارة الإلكترونية

E-commerce: use of the internet and web to transact business. Began in 1995 and grew fast.

why it's different? Ubiquity (internet available everywhere, anytime)

unique features of e-commerce:

→ **Global Reach** (the internet reaches across the world.)

Effect: people can sell & buy from any country.

→ **Universal Standards** (internet uses one standard)

Effect: device & systems can work together easily / easy for new businesses to enter the market.

→ **Richness** (supports video, audio, text)

Effect: you can send rich messages

→ **Interactivity** (users can click, choose, interact)

Effect: the website changes based on user actions.

→ **Information Density** (there's a lot of clear information online)

Effect: easy to compare prices & costs

→ **Personalization / Customization** (websites change content for each user.)

Effect: you get personal messages and offers / products can be adjusted to your style.

Digital Goods: products you can download online (music, video, software, books)

types of E-commerce: 1/ Business-To-Consumer (B2C) 2/ Business-To-Business (B2B) 3/ Consumer-To-Consumer (C2C)

E-commerce business models: Portal / E-tailer / Content provider / Service provider / community provider.

E-commerce Revenues models: Advertising / Sales / Subscriptions / transaction fee / Affiliate.

E-commerce Marketing:

long tail marketing: ability to reach a large audience.

Behavioral targeting: tracking online behavior of individuals on websites

Internet advertising formats: search ads, display ads, rich media, email.

Social e-commerce: the purchases of one person influence other purchases.

M-commerce: through mobile, 10% of all e-commerce, fastest growing, popular for travel industry.

Geosocial: shows where your friends are / **Geoadvertising**: shows nearby stores / **Geoformation**: tell the price you're looking for.

CHAPTER 12: Enhancing Decision Making

. Big Data & the Internet of Things Drive Precision Agriculture:

تسارع تطور الزراعة باستخدام الإنترنت والأجهزة

. Problem: explosive population growth / Opportunities from new technology.

زيادة سريعة في عدد السكان + فرص تكنولوجيا جديدة

. Solution: Identify technologies & decisions for improvement / IoT wireless sensor / Mobile device

. Precision Agriculture Systems: demonstrates IT's role in providing information intelligence, help small business like farmers improve efficiency.

أنظمة الزراعة الدقيقة

for example: farmers who use devices & sensors, they can know where to plant, which area in their land is better which makes them save time, efforts, money.

. The different types of Decisions: (many small decisions = big overall value)

1/ Unstructured: needs judgment, evaluation, insight to solve problem (senior managers) opening new branch

2/ Structured: Repetitive and routine; follow clear steps (operational managers) take orders / print receipts

3/ Semistructured: only part of the problem has a clear solution. (middle managers) hiring new employee.

. Decision-Making Process: 1/ Intelligence (find the problem) 3/ Choice (pick a solution)

2/ Design (explore solutions)

4/ Implementation (apply & follow up)

. Managerial Roles: information system can help with some managers roles.

Classical model: planning / organizing / coordinating / deciding / controlling.

شؤون المصراء المفروضة يشتملون؟

But contemporary behavioral models: less systematic / More informal / More reactive!

الواقع :

. Mintzberg's 10 Managerial Roles:

→ 1/ interpersonal roles (figurehead / leader / liaison)

ادوار التفاعل مع الناس: واجه رسمي / قائد / وسيط

→ 2/ informational roles (nerve center / Disseminator / spokesperson)

ادوار تتعلق بالمعلومات: مركز المعلومات / الموزع / المتحدث الرسمي

→ 3/ Decision roles (Entrepreneur / Resource allocator / Negotiator / Disturbance handler)

ادوار اتخاذ القرار: راسد الأعمال / موزع الموارد / المفاوض

. Three main reasons why IT investments not always give good results:

1/ information quality, 2/ management filters, 3/ organizational inertia & politics

مقاومة التغيير

. High-Velocity Automated decision making: made possible through computer algorithms (No Humans) needs safeguard. (for example: high speed trading programs.)

Business Intelligence (BI): collecting, storing, analyzing data. (Databases/ Hadoop/data warehouse)

Business analytics: tools & techniques for analyzing data. (OLAP/ statistics/ models/ Data mining)

Business intelligence vendors: create BI & analytics purchased by firms.

BI environment elements: 1/ Data from the business environment

شئ الأشياء التي لازم تكون

2/ BI infrastructure

البنية التحتية للبيانات التي تخزن

موجودة عند الشركة

3/ Analytics toolset

ادوات تحليل البيانات

تقدر تستخدم BI ؟

4/ Managerial users & methods

الاشخاص التي يستخدمون البيانات



5/ Delivery platform (DSS, ESS, MIS)

منصة التقديم

6/ user interface

الواجهة بطريقة العرض

For example: BI program shows the best seller item through graph or chart.

Main functions of BI systems:

1/ Production Reports

تقرير شهري عن المبيعات

4/ Ad hoc query/report creation

تقرير مؤقتة حسب الطلب

2/ Parameterized Reports

تقرير عن مبيعات فرع واحد فقط

5/ Drill Down

تدخل البيانات وتكشف التفاصيل

3/ Dashboards/scorecards

لوحة فيها ارقام وبيانات

6/ forecast/scenarios/models

توقعات و نماذج

Predictive Analytics: use historical data/statistics/assumption to predict the future trends&behavior.

Big Data Analytic: Massive datasets collected from social media, online & in store customer data through: public record, sensors, location data from phones.

location analytics: using place information to understand data from the location.

by using: mobile phones/ Sensors/ Map data. (Google maps tells us if the street has traffic)

Geographics information systems (GIS): ties location-related data to maps (helps cities to find the best places to build new schools)

Decision support for senior management:

ESS: support for senior management, help focus on performance.

Balanced scorecard = 4 Key areas: financial/business process/customer/learning & growth.

Key performance indicators (KPIs): measure each area & the progress

Business performance management (BPM): translates & turns strategy into goals.

Internet of Things (IoT): creating huge streams of data from web activities, sensors, monitoring

Decision support system (DSS): support semi-structured decisions.

Middle managers use management information system (MIS)