



Information System Management (MIS)

Chapter One: The importance of The MIS

Dr. Baha'eddin Alhaj Hasan
Department of Industrial Engineering

46 Slides.

- we will be taking an overview of MIS.

Motivation

- Graduated students realize how valuable for the job market it is to have skills related to information systems.
- In this course you will learn what information systems are all about and why they are so fundamental to business and society.
- Our journey will be exciting filled with revelations about business strategies, technology trends and innovations, and also tips that will help you work smarter as a student

What is an Information System (IS)?

- At the heart of every organization is its information system.
- Either it is on the cutting edge of technology company like Google, Facebook ..., or those that don't seem very high tech (family owned restaurant or a fitness gym)
 - Can hardly survive without **information systems** or without **people** who know how to build and manage them.

Personal
Info sys.

* حاليًا كنا نعلم أن IS الخاص فيه (أو Account على Google) عبارة عن

* حاليًا إحصائيات برنازم متداولة من IS (IS) أنت جزء من IS كطالب الجامعة
ميرد من IS للأردن كدولتك أو Residence فيها

What is an Information System (IS)?

- A set of interrelated components that collect, manipulate, store, and disseminate data and information and provide a feedback mechanism to meet an objective (Stair and Reynolds, 2010).

- The Information Systems major is for people who want to solve problems businesses face and create new opportunities by using the latest computer technology.

They help organizations use technology to operate more efficiently. They work with other business and IT people to build systems for executives and managers that support their decisions (University of Arkansas).

عرف
Field
معين
وحي ال
Business.

how?

التعرف
ربط IS
ب IT Tech
وب IS تاليف

وربط بال IT
People.

2 main components in any IT sys.

1 Tech

2 IT People

What is an Information System (IS)?

تعريف أوسع من السابقين

عن مكونات
Networks & components:

يحتوي عن
Hardware & Software
People & Organizations

The study of complementary networks of hardware and software that people and organizations use to collect, filter, process, create, and distribute data (https://en.wikipedia.org/wiki/Information_system).

- 1 collect
- 2 filter
- 3 process
- 4 create
- 5 distribute data

ذلك معلومات
من Wikipedia

تعريف أوسع من
إلى قبله

Combinations of hardware, software, and telecommunications networks that people build and use to collect, create, and distribute useful data, typically in organizational settings (Information Systems for Business & Beyond, 2019).

* I have to have.

IT components & Human Components. Why?

Procedures
معرفة
Data (النتائج)

to utilize the hardware & software & the telecom networks. (IT components) to distribute, use, create, collect, useful data.

* مش بالضرورة يكون عندي Organization
IS (Infosys) عندي

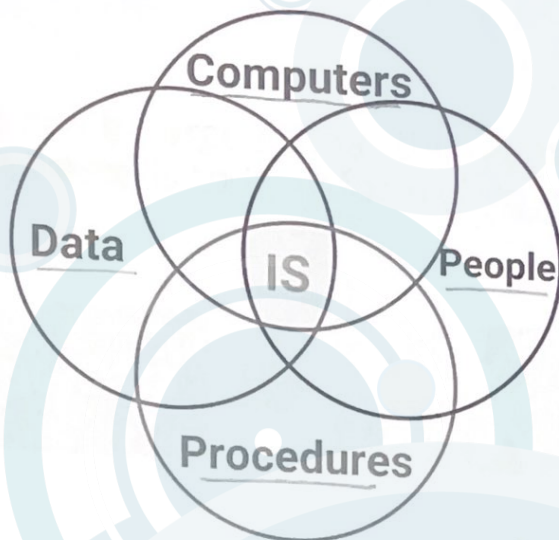
WHAT IS AN INFORMATION SYSTEM?

يشمل جميع التعريفات السابقة

What are Information Systems (IS)?

"An **Information System** is a group of **components** that interact to produce **information**."

COMPUTER INFORMATION SYSTEMS



dept
عن
البيانات



Computer Components

Human Components

مع نفسها
* الـ Data والـ
بهم يعالجها
* أحسن حالة
متوسطة

كلمة رح يتعاونوا
To analyze &
generate Data

بـ
البيانات

IT
Information Technology (IT)

Software

Hardware

Data



It can be argued that the main purpose of Information Systems is to transform data into information

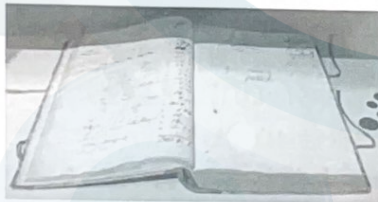


改善

KAIZEN

TEAM

Data – raw facts about the world



Information – Processed or summarized raw facts that can be used in decision-making

STATEMENT	
WACHOVIA NATIONAL BANK, WINSTON, N. C. JANUARY 30TH, 1900.	
(CONDENSED FROM REPORT TO THE COMPTROLLER OF THE CURRENCY.)	
ASSETS	
Loans, including Overdrafts	\$ 511,749.63
U. S. Bonds and Premiums	\$2,300.00
Real Estate, Furniture and Fixtures	4,500.00
Subscription fund with U. S. Treasury	2,500.00
Cash and Due from Banks	208,332.30
	\$830,320.93
LIABILITIES	
Capital	\$ 150,000.00
Surplus and Undivided Profits	111,187.40
Deposits	569,093.53
	\$830,280.93
W. A. LEMLY, President.	JAS. A. GRAY, Cashier.

Knowledge – Information that leads to valuable actions

أخذت الشهر درجات الحرارة
تبعه

لما جمعت درجات الحرارة
وأخذت ابيوه تبعهم
حاي معلومة

قررت أطلع وأعمل
فعاليات عنان
الجو حلو

Remember

Data, Information and Knowledge

Data are raw facts.

Data is pure values which themselves do not have much significance.

Data may be in the form of numbers, letters, characters, images and graphics, audios, or videos.

Information is processed, manipulated, and interpreted data.

Knowledge: is an interface or conclusion drawn from the information.

Conclusion
إلى طاعت فيها
من Info

Example

Transforming Data to Knowledge:

A patient's single high-temperature reading at a 24-hour walk-in clinic

But entered into the clinic's information system and combined with the patient's other symptoms and previous medical records, it becomes far more valuable as a diagnostic tool

Combining it with data from other patients entering all clinics that week.

The patterns may warn of a flu outbreak or even a major epidemic

Centers for Disease Control and Prevention draw on data like this to map the spread of diseases and take swift action to protect the public.

يتم تجميع الـ Data
تبع كل العيادات
مع بعض

معلومات أحادية
Single data value

أعطاهم
Symptoms
عشان أعرف إننا في
Repeated Pattern.
بداخل الـ Data على برنامج

Conclusion
إلى طاعت
بعضها الـ
Markers
عشان يتصرفوا

Data → Information → Knowledge

FIGURE 1-6

Examples of the continuum from data to information to knowledge, as meaning and usefulness grow.

Data	Information	Knowledge
Patient's temperature at walk-in clinic on Dec. 15 = 103.9° F.	Table showing flu diagnoses in region during month of December	Worldwide map of flu outbreaks suggesting pandemic
01010011 01001111 01010011	Binary code for SOS	HELP!!!
Microsoft (MSFT) closing stock price	Graph of Microsoft highs and lows for one year	Combined with analysis of other information, leads to broker's recommendation to buy, hold, or sell stock
CWOT	Complete Waste of Time (text messaging abbreviation)	May be interpreted as an insult
GPS coordinates	Map showing location with push pin	Location of Taj Mahal in India
Invoice #259 Total Amount = \$139.23	Total Sales for Southern Region in First Quarter = \$2,156,232	Fastest growing sales region; consider broader marketing campaign

IS → is a process in which input data is converted to output info.
 ↳ Info is processed & interpreted data.
 ↳ Conclusion → Info → Knowledge.

What are the Characteristics of Information?

- **Accurate:** Information must not contain errors
- **Accessible:** authorized users should be able to access the information.
- **Complete:** Information must contain all important elements.
- **Economical:** Information should be economical to produce in terms of both time and cost. time & \$
- **Format:** available in the desired format.
- **Flexible:** ability to transform information from one form to another and flexibility to be used for different purposes

على شكل
charts, histograms
etc.

على شكل جداول أو مخطط بالهوية
etc.

Characteristics of Information ... Cont'd

ويمكن الاعتماد عليها

- **Reliable:** Information is dependable, should be generated using correct data
- **Relevant:** Information must be relevant *can relate to it*
- **Secure:** saved in safe places with appropriate access authorization
- **Simple:** Information must be easily understandable and usable.
- **Timely:** Information must be available when it is needed and up to date. *إليه علاقة بالجدولة الاقتصادية للمعلومات*
- **Verifiable:** there should be means to cross check the information *لأنه يكون عندي Access للمعلومات وللأساس Source تجمعتها.*

أحد جوانب عرفنا الـ IS

WHAT IS MANAGEMENT INFORMATION SYSTEMS

» Management Information Systems (MIS)

comprise the development and use of information systems that help organizations achieve their goals and objectives. ** لما الـ Info تستخدم من Orgs وليس عندي (MIS)*

» Key elements:

- ◊ Development and use
- ◊ Information systems
- ◊ Goals and objectives

لما استخدام شخصي
→ IS
لما استخدام Organization
→ MIS.

DEVELOPMENT AND USE OF INFORMATION SYSTEMS

» You need to:

- ◊ Take an **active role** in order to ensure that system will meet your needs.
- ◊ Learn how to **acquire** information systems, by asking critical questions.
- ◊ Learn how to **use** information systems.

* To utilize any IS I have to know if that IS covers my needs or NOT.

1. Will it meet my needs?
2. To acquire info Ask critical questions
3. How to use IS? Correctly.

ACHIEVING BUSINESS GOALS AND OBJECTIVES

* هار الهكر مكلف جداً

» MIS aids businesses in achieving objectives:

- ◊ Organizations themselves don't do anything.
- ◊ People within an organization or business who: sell, buy, design, produce, finance, market, account, and manage.

» MIS empowers users to reach goals:

- ◊ Exist to assist business people.
- ◊ Need to be developed for right reason.

ACHIEVING BUSINESS GOALS AND OBJECTIVES

- » What questions would you ask?
- » What would be the benefits/downsides of modernizing?
- » Would you make the investment to update the system? Why?

بالتفصيل
في
in ch.2.

改善

HOW DOES AN IS DIFFER FROM IT?

- » **Information system (IS)** is a system of hardware, software, data, procedures, and people that produces information

* العنصر البشري
IS
(Skilled workers)

- » **Information technology (IT)** represents raw technology, components of IS

- Hardware
- Software
- Data components

* ما في
Procedures
ولا

→ IT is part of IS
BUT IS is NOT part of IT

HOW DOES AN IS DIFFER FROM IT?

INFORMATION SYSTEMS



INFORMATION TECHNOLOGY

5 components

تعريف الـ IS: استخدام التكنولوجيا

diff. components الـ IS بتستخدمها

IS: is the info technology, that is utilized by people in organizations that are making Procedures to utilize data.

So, IT components
Human components
Interaction
Data

Six Major Roles of Information Systems

FIGURE 1-1

The major roles of information systems in organizations.

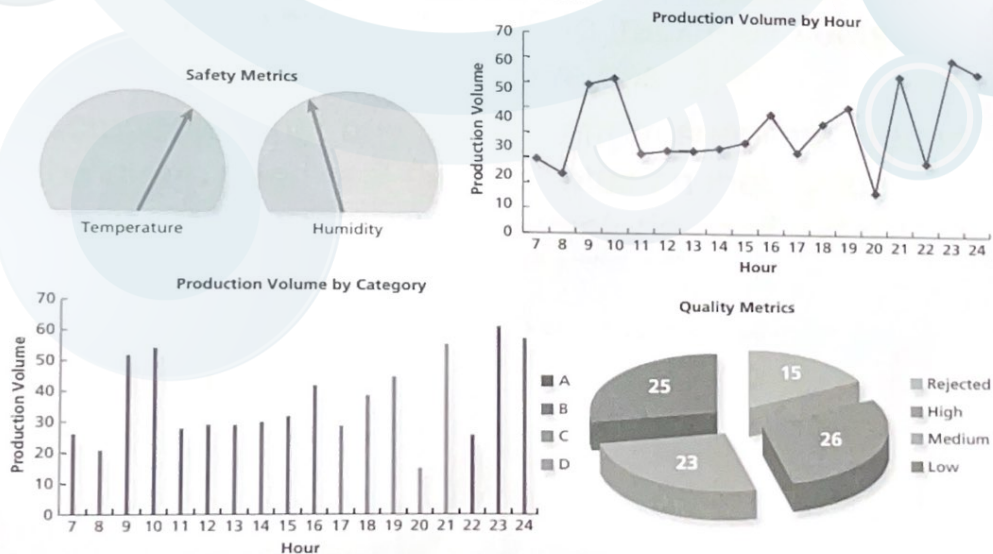


Managing Operations

- **Operations Management:** involves the design, operation, and improvement of the systems and processes the organization uses to deliver its goods and services.
- Information systems :-
 - Are crucial for tracking employee payroll, taxes, benefits ..
 - Accounting information systems are essential to track accounts receivable, to process transactions, to procure goods and services, and to pay the suppliers.
 - Back-office Information Systems keep all details about the company and operations.
 - Commercial information systems software packages: SAP, Oracle, NetSuite, or QuickBooks.

Industry Specific Operations

FIGURE 1-2
Manufacturing information system displaying production volumes and other metrics.



Industry Specific Operations ... Cont'd

- Colleges and universities need systems to manage student academic records, class scheduling, faculty assignments, and student financial aid.

MyCollege	MyTools	MyClasses	MyProfile																												
Update contact info View schedules Submit request View requirements Register for courses		<table> <tr> <th>Course</th><th>Days</th><th>Time</th><th>Location</th></tr> <tr> <td>Bus 111</td><td>MW</td><td>14:00-15:00</td><td>Macintyre</td></tr> <tr> <td>Bus 111</td><td>MW</td><td>15:00-16:00</td><td>Doyle</td></tr> <tr> <td>Bus 112</td><td>T-TH</td><td>9:00-10:45</td><td>Student Services</td></tr> <tr> <td>Bus 112</td><td>-</td><td>-</td><td>Online</td></tr> <tr> <td>Bus 112</td><td>M</td><td>9:00-11:45</td><td>Garcia</td></tr> <tr> <td>Bus 113</td><td>W</td><td>1:00-2:45</td><td>Doyle</td></tr> </table>	Course	Days	Time	Location	Bus 111	MW	14:00-15:00	Macintyre	Bus 111	MW	15:00-16:00	Doyle	Bus 112	T-TH	9:00-10:45	Student Services	Bus 112	-	-	Online	Bus 112	M	9:00-11:45	Garcia	Bus 113	W	1:00-2:45	Doyle	
Course	Days	Time	Location																												
Bus 111	MW	14:00-15:00	Macintyre																												
Bus 111	MW	15:00-16:00	Doyle																												
Bus 112	T-TH	9:00-10:45	Student Services																												
Bus 112	-	-	Online																												
Bus 112	M	9:00-11:45	Garcia																												
Bus 113	W	1:00-2:45	Doyle																												

FIGURE 1-3

Student information system with online services for students and faculty.

مثلاً نظام التسجيل
يساعد الطلاب بسهولة
التسجيل

Industry Specific Operations ... Cont'd

- Transportation companies rely on information systems equipped with GPS to track their fleets, optimize routes, and conserve gas.
- Companies that buy products from suppliers around the globe need real-time updates on their global supply chains to manage inventories and reduce costs

might be used to manage inventories too.

End of
1st lecture.
16/10/23

Supporting Customer Interactions

أنواع الـ IS

- Customer Relationship Management (CRM) systems, (discussed in Chapter 5), build and maintain relationships and support all the processes that underlie them.
- Identifying each product in the shopper's basket, tallies the total, feeds the data to the inventory system.
- Strategies to prevent theft.
- Web-based shopping and self service:
 - less phone calls
 - Web application helps understanding the motives and desires of each person (suggestions, special discounts, wish list ...)

IS خاص ببناء جميع العلاقات مع العميل أو مع Supplier لأنها عملية معقدة

زيادة البضائع أو تقليلها أو زيادة التسويق تبعها أو جعل تنزيلات على بضائع معينة بأوقات معينة

يمكن زيادة النزعة التراجعية تتبع العميل

Making Decisions

FIGURE 1-4

How do managers answer questions like these?

Should we offer free wifi to customers?

Should we add more fish to the menu?

Where should we open another branch of our restaurant?

Can we save money by closing an hour earlier?



* كل level من هاي الاعلما في الـ IS خاص فيه يقدم معلومات تستخدم للإداريين كـ Knowledge يتم استخدامها لإتخاذ القرارات

وظيفة مهمة لـ IS

Making Decisions ... Cont'd

- Managers make decisions every day, and many rely mainly on their own judgment.
 - A survey showed that 40% of major corporate decisions were based on instincts (intuition) → مش مجرد لمسة مبني على خبرة متراكمة
- Good decisions those which are based on data (data-driven decision making)
 - Information systems provides this information.
 - Large number of pieces of data to reveal important trends and patterns.
 - Example: the sales system will show how much the restaurant makes in the last hour of business → manager makes a good decision about closing early.

Making Decisions ... Cont'd

- أحصل معلومات خارج إطار الـ IS إلى عندي
- Business intelligence refers to all the information managers use to make decisions
- This information can come from many sources beyond the organization's own information systems.
- The restaurant manager, for example, might combine customer records with publicly available information about income levels by area code to help make a smart decision about where to open another branch.
- Decision support systems and business intelligence, blends rapid analysis of information sources with artificial intelligence and human knowledge.

يمكن توفير معلومات ولكن أحياناً من الصعب التحقق من مصداقية من زيار الـ IS

يمكن تبني بطرق التجسس

من الـ Data Patterns
بإني أطلع Trends
تساعدني يكون عندي
نظرة مستقبلية
في شيء Predictable
تساعدني أخذ قرار
بالظروف الحالية
أو للشركة

Collaborating on Teams

فتح مجال واسع للعمل
أو الدراسة أون لاين

اجتماع الإداريين
ممكن من خلال
تيمز أو زوم

Collaboration and teamwork

تعزيز team works

- Innovative information systems that allow people to work together at any time and from any place.
- Participants can hold online meetings, share documents and applications, and interact using microphones, video cameras, and whiteboards.
- Social networking sites support online communities: Facebook, Twitter ...
- Services that target business users, such as Microsoft's SharePoint, offer additional useful services such as shared calendars and group document editing.

customer relationship management (CRM) system

An information system used to build customer relationships, enhance loyalty, and manage interactions with customers.

data-driven decision making

Decision making that draws on the billions of pieces of data that can be aggregated to reveal important trends and patterns.

business intelligence

External Sources

The information managers use to make decisions, drawn from the company's own information systems or external sources.

social networking sites

Online communities of people who create profiles for themselves, form ties with others with whom they share interests, and make new connections based on those ties.

Improving Individual Productivity

دائماً اريد
ان يدعم قدرات
العمال في عملك

- To improve productivity at work, people can choose from a bewildering variety of computer software and electronic devices, but more is not necessarily better.
- You should select carefully, with an eye to the functions you need most, ease of use, and short learning curves.

لا ينبغي التراجع الي
ممكن ان تطور قدرات الموظفين في عدي

PRODUCTIVITY TIP

Time management experts advise that you process your email inbox to zero, flagging important messages, moving others to appropriate categories, and rerouting some using automated filtering tools. Your email system can do quite a bit of work for you if you take time to configure it.

غالباً الشركات بتطور التطبيقات الخاصة فيها

To improve Productivity
عن طريق
Variety of softwares
عنا

COMPETITIVE ADVANTAGE

- » **Competitive advantage** refers to factors that allow a company to produce goods or services **better** or **more cheaply** than its rivals.

هون بتحدث عن
شيء واحد شركة بتنتج
سلع تكون كـ Quality
أفضل وكسر أقل من لباقي
وبالتالي مالها ميزة
تنافسية

- ◊ **Cheaper product** = less money going out, more margin.
- ◊ Or **cheaper product** = more price competitive than rivals, more sales, more money going in, more margin.
- ◊ A **better product** = more sales, more money going in, more margin.

COMPETITIVE ADVANTAGE

- » Consumers are accustomed to yearly advances in
- devices (smaller, more powerful)
 - services (faster, more reliable)
 - costs that are either lower or services greater for same cost

more services رخيصة
ما هي أو تكون أرخص

Free, Perfect, and Now

أقدم خدمة بلا مش

Free or delivered at no cost (Twitter, Instagram, Facebook, Google)

Contain no errors or mistakes, competitive with alternatives

ما فيها أي أخطاء
وتقدر تنافس أي
Alternative.

Delivered almost immediately, usable and available 24/7, no wait or downtime

وايلاً حالاً
والخدمة متاحة
دائماً

6 Major Roles of Info sys
حيزك مدينا على

Data

- It is all about data

Digital data → تتخزن → in digital devices.

- Formats of data: numbers, letters, or... audio, or video signals.
- Regardless of the initial form, data is converted into digital format.

what is MIS?
Data Science in Swins

جميع السور
إلى بتعتبر
على AI
قائمة على
Data

https://www.youtube.com/watch?v=c36M6oJS8sc

https://www.youtube.com/watch?v=X3paOmcrTjQ

archives
microfilm

ثورة في علم
التخزين
Macrofilm
Info sys

IoT Internet of things

- It is becoming the main source for data; as billions of devices are connected.

https://www.youtube.com/watch?v=WCfwEYaPuDQ

Internet of Things (IOT) and it's Applications in Manuf.



Devices Connected (IoT)



FIGURE 1-13
The Internet of Things.

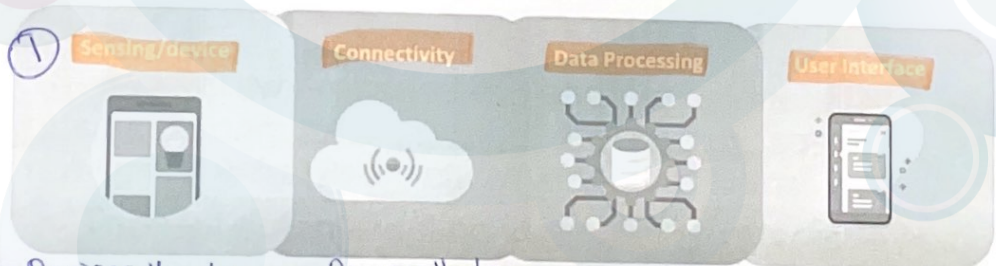
Smart Networks جميع ال
إلى عنا بستند
بالدرجة الأولى على ال

Sharing of Data
Highly Interconnected Networks
Computer
إلى متصلة حول العالم
≡ IOT

حجم ال Digital Data stored → نجز عن

طريقة جمع البيانات (IoT) Devices Connected

layers of IOT



ہائی ڈیویسز جمع لی
ار ڈاتا

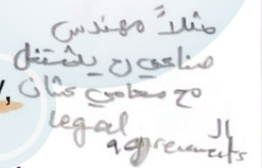
Devices (الأجهزة)
Connected (متصل)
عن طريق
Cloud or Regular
network.

بعد من اح يسير
مصري Processing
لواي ال data من
خلال ال Processors
على الأجهزة تبع
ال Computer
تقنيات عالية
جداً

المعلومات كلها
من قِبل مركز
البنية من تكون
Available for
the user
w/a user
interface.

Chaitin

- ১০০



- Data الى يتجمع ناتجة
 من أشخاص من Different Disciplines
 كل واحد يعطي ال Perspective تبعه

Topic	Sample Research Questions
Internet of Things	What kinds of devices can be used to collect data? How should the data be used?
Big data and data analytics	How can organizations collect and analyze big data to achieve competitive advantage?
Development of information systems	What are the best ways to develop new software? How should end users be involved in the development process?
IT in organizations	How should managers introduce change when new systems are implemented? What kinds of IT policies about "acceptable use" work best in different organizations?
IT and individuals	How should IT develop systems for the disabled? What kinds of interfaces are easiest for people to use?
IT and collaboration in groups	Why do virtual teams succeed or fail? How can managers use social networking to promote innovation?
IT and markets	How does the Internet affect the real estate business? How should businesses promote online sales?

* مع نحاول نجابوهم من خلال الـ Course

Why do Industrial Engineering learn this topic?

كونه عندي Big Data
أنا بحاجة للـ Analytical tools
حتى تساعدني أعمل هاي المعلومات

- **MIS** is a young discipline, and **researchers strive to keep up with the rapid changes and trends**

▪ **IoT**

- **Generating big data**
- **Need analytical tools**

▪ **e-Marketplaces:**

- **Threatening traditional players**
- **Airbnb** (Boycott Israel).

Virtual Company.

- **booking rooms provided by individuals**
- **Competitive**
- **Own zero rooms**

▪ **Uber ...**

Big data

Volume of data generated online per second:

- Emails: 2,314,084 sent
- Tweets: 7,231 sent
- Instagram: 1,129 images uploaded
- Tumblr: 1,352 posts
- Skype: 1,473 calls
- Internet: 22,148 GB of traffic
- Google: 44,490 searches
- YouTube: 84,841 videos watched
- Facebook: 30,000 likes, 5 new profiles

من خلال حجم المعلومات
السهول هاد كيف ممكن أوله
بين لل Data إلى بتهمني؟
بدي محركات وبرامج
عائلة جداً وذكية للغاية

Source: How Business Works, 2015, p262-263

Information Systems throughout the Organization

- The "people" component of information systems is critical; Just making technology work is not enough to create a successful information system.

most imp component of any org → skilled workers
الفرق الأساسي بين IS و IT هو وجود ((Skilled workers))

Information Systems throughout the Organization

مجرد Examples

Why should you learn about information systems?

- "My career is marketing, developing creative ad campaigns. Those IT folks speak their own language, and I speak mine." المفهومين تفهم
الإمكان تكون عيني
مفتوحة على التطورات الممكن تفهم شغلك
- "I'm in human resources—the only system we use is the one the company set up. It's really a disaster, too. We really need a way to train new people faster, before the ones who have all the knowledge here leave." صافي مهنة
في العالم ما
بتتأثر بالآي
- "We're a nonprofit volunteer organization. We can't spend money on expensive overhead like IT, so what's the point? We don't need anything fancy—just email and word processing." البعض بطلع
عابها كوظيفة
والبعض كمستقبل

Information Systems throughout the Organization

- These people don't realize the importance of inf. systems and the individuals who know about it, and how it can contribute to the organization's success