CS330 Final Exam Review

LaTeXer: W. Kong

1 Introduction to MIS

IS/MIS (*): A set of interrelated components that collect, process, store and distribute information to support decision making and control in an organization
Mission (*): To improve the performance of people in organizations through the use of information technology (BI + Automation)
Issues (*): Why MIS? (Cost and benefit analysis) How to develop? (Design, implement and integrate) How to manage? (Training, new business practice, privacy and security)
Benefits (*): Competitive Advantage and Survival
Two Sides of MIS (*): Technical and Behavioural
MIS are Dynamic: Requires adaptation to the demographic that it is serving

2 Business Processes and MIS

Eternal Conflict: Demoting technology to improve how the technology fits the firm (conflict between complexity of tech. vs. organizational structure)
Resistance to Change (*): People (organizations and in politics) are naturally resistant to change, but change change is good for long term economic growth; creates Creative Destruction, which is the destruction of old tech. to make way for new tech.
Case Study (IT outsourcing with no central headquarters): Understand advantages and disadvantages.
Business Processes: Part of a functional area; the manner in which work is organized, coordinated, and focused to produce a valuable product or service
IT and BP: IT enhances BP through the use of automation; note the dichotomy between the technical and behavioural aspects
Issues of BP (*): What BPs can be automated? (Often not difficult to identify) What data should be stored? (The more the better, but for the same BP, how it is automated affects what data you can get) Do you know what you are looking for? (Knowledge management system (KMS)) What information can be drawn out from the data? (BI)
Business intelligence (BI) (*): Collect data (data) / Gather information to support decision making (information) / Gain intelligence (knowledge)
Functional Types of IS: Sales and Marketing systems, Manufacturing and Production systems, Finance and Accounting systems, HR systems (have some knowledge of how they work)
Types of Management: Senior, Middle (Scientists and Knowledge workers), Operational (Production, Service and Data workers)
Components of MIS (*): Transaction Processing System (TPS), Management Information System (MIS), Decision Support System (DSS), Executive Information System (EIS)
TPS: Automates BPs, Record daily routine transactions necessary to conduct business, Records, calculates, stores and displays daily business data from every department (Examples: sales order entry, payroll entry, shipping entry), Allow frontline workers and managers to monitor status of operations and relations with external environment , Used by operational level personnel, Supports higher level management functions
MIS: Serve middle management, Provide reports on firm's current performance, based on data from TPS, Provide answers to routine questions with predefined procedure for answering them, Typically have little analytic capability, Examples: sales and marketing summaries, personnel skills summaries, production schedule
DSS: Serve middle management, Support nonroutine decision making (Example: What is impact on production schedule if December sales doubled?), Often use external information as well from TPS and MIS, Model driven DSS vs. Data driven DSS
ESS: Support senior management, Address nonroutine decisions requiring judgment, evaluation, and insight Incorporate data about external events (e.g. new tax laws or competitors) as well as summarized information from internal MIS and DSS (Example: ESS that provides minute-to-minute view of firm's financial performance as measured by working capital, accounts

receivable, accounts payable, cash flow, and inventory)
Relationships: TPS to MIS+DSS, MIS to ESS+DSS, ESS to [], DSS to ESS
Flow of BP, Data and Information: Horizontally across different functional areas (Order fulfillment), Vertically across different level of managements, Diagonally across different functional areas and different level of managements (Processing a travel claim) [this is the most common]; sometimes unidirectional and sometimes bidirectional
Integration tools: Intranet and extranet, ERP, SCM, CRM, KMS
Integrated Enterprise Architecture: See Chapter 02 Part 03, Page 19
Other Systems: Office Automation System, Group Support System
IT System Department: The information systems department (Programmers, Systems analysts, Information systems managers, Chief Information Officer (CIO)), End users Service agreements (Technical and administrative support, Conflict resolution unit)

3 Organizations and MIS

Resistance to Change (*): Due to: Routines and business processes, Organizational politics, Organizational culture, Organizational culture
Models for Understanding Change (*): Leavitt Diamond (Task, Technology, People, Structure)
Organizational Structure (*): Entrepreneurial (small, start-up), Machine bureaucracy (midsize manufacturing), Divisionalized bureaucracy (GM), Professional bureaucracy (law firms), Adhocracy (consulting firms)
Impact of IS on Organizations (*): Organizational/Behavioural (flattening), Economic (effeciency/labour, building, and machinery costs), Internet Economy (time and space shift/opportunities and challenges)
Transaction/Agency Cost Theory: As the firm's size increases, the firm's transaction/agency costs generally decreases
Which system to use?: Decide using SWOT, COPE, PEST, STEEP, EPISTEL and... *Porter's competitive forces model/Value chain benchmarking*
IS Competitive Strategies (*): Low-cost leadership (Wal-Mart), Product differentiation (Google), Focus on market niche (Hilton's hotels), Customer and supplier intimacy (Chapters/Indigo)
Other models: The Value Web, The Circle of life

4 Ethics and MIS

Basic Definitions(*): Ethical - Principles of right and wrong that individuals use to make choices to guide their behaviors, Social - affecting people or communication, Legal/Political - knowing the law and working within its limits
Moral Dimensions of the Information Age: (1) Information rights and obligations (2) Property rights and obligations (3) Accountability, liability and control (4) System quality (5) Quality of life
Technology trends: Computing power doubles every 18 months (increase in # of firms depending on computers), Data storage costs rapidly declining (maintain databases on individuals), Data analysis advances (ability to gather large amounts of data on individuals to develop behavioural profiles on them), Networking advances and the internet (allows more easily the remote accessing of data)
Case Studies on Ethics: What data should ethically be for sale? Ad hominem attacks through segmenting sentences, semantics of segmenting sentences? Monitoring your employees? Video games at work?
Basic Concepts (*): Responsibility (Accepting the potential costs, duties, and obligations for decisions), Accountability (Mechanisms for identifying responsible parties; who is responsible?), Liability (Permits individuals to recover damages done to them), Due process (Laws are well known and understood, can appeal to higher authority), Implications to the use of IS
Ethical Analysis (*): Identify and clearly describe the facts, Define the conflict or dilemma, and identify the higher-order values involved, Identify the stakeholders, Identify the options that you can reasonably take Identify the consequences of your options
Ethical Principles: Golden Rule, Immanuel Kant's Categorical Imperative, Descartes' rule of change, Ethical "no free lunch" rule, Utilitarian Principle, Risk Aversion Principle
Loss of Control: Cannot control something posted on the internet in: How it is used, and How it is interpreted
Privacy: Claim of individuals to be left alone, free from surveillance or interference from other individuals, organizations, or the state

[1] Information Rights (*): When online, what information should be kept private? Can they be kept private? What about third party cookies? Opt-in vs. Opt-Out?
Solutions?: Industry: Truste Seal, Technical: Encryption, P3P, Privacy control in web browsers
[2] Property Rights (*): Intellectual property is protected by copyright, patents and trade secret (See A2 to understand differences (important))!
Problems to IP Rights?: Perfect digital copies cost almost nothing, Sharing of digital content over the Internet costs almost nothing, A web page may present data from many sources and incorporate framing, Sites, software, and services for file trading are not easily regulated
[3] Accountability, Liability and Control (*): Accountability - Mechanisms for identifying responsible parties, Liability - Permits individuals to recover damages done to them, Control - Power over information or systems (Computer-related liability problems)
[4] System Quality (*): Systems will always have error (data input quality / system error) and they are not perfect. Thus, we ask... Who is responsible for the damage? At what point should software be shipped?
[5] Quality of Life (*): Decentralized control structure (Flatten the organization, Empower the employees), Rapidity of change - Reduced response time to competition means some jobs lost and companies out of business (A "just-in-time" society) Maintaining boundaries - Family, work, and leisure, Job loss due to new technologies or revised business processes (Creative destruction), Outsourcing Health risks - RSI, CVS, radiation, and Technostress (Ergonomic design), Equity and access - Increasing racial and social class cleavages (Digital divide), Computer crime/cyber-vandalism: illegal (stealing data), Computer abuse: unethical (spam)
Spam: This is a big problem... that is all
Eternal Conflict: Better product vs. Invasion of privacy
Check out the answered questions on the Ethics Part 2 Powerpoint.

5 Security

Computer Security: The policies procedures, and technical measures used to prevent unauthorized access, alteration theft, or physical damage to information systems
Cyber Threats (*): Be sure to know a bit of the following: worms, viruses, trojan horses, spoofing (phising, pharming, evil twins), sniffing, Denial of Service attacks (DoS), Distributed DoS attacks, click fraud, cyberterrorism and cyberwarfare, adware, spyware, malware, email spam, hacker, replay attack, salami attack
Case Study: Someone knocks on your door... know the steps
Proper measures: A user wants to access an online ordering web site: The user is legit, Restrict his access to certain part of the system, He cannot overhear other people's conversations, He cannot modify other users' data, He can place an order if so desired, He keeps his words after placing the order
Security Services (*): Authentication, Access Control, Data confidentiality, Data integrity, Non-repudiation, Availability
Authentication: assurance that the communicating entity is the one claimed
Access Control: prevention of the unauthorized use of a resource
Data Confidentiality: protection of data from unauthorized disclosure
Data Integrity: assurance that data received is as sent by an authorized entity
Non-repudiation: protection against denial by one of the parties in a communication
Availability: assurance that services are available when needed
Security Implementations: Firewall, Antivirus software, Hardware Controls, Security software, User awareness
Cryptography: The longer the key, the stronger the encrpytion; Moore's law implies security is relative to computational power (brute force search); computer security needs a constant upgrade
Encryption (**): Symmetric vs. Public key encryption; KNOW HOW THIS WORKS (RSA scheme)
Digital Signature (*): A digital signature is a unique mathematical value for a digital message or document. A valid digital signature *gives a recipient reason to believe that the message was created by a known sender*, and that it was not altered in transit (*Protect data authenticity and integrity, and non-repudiation*). Sender's *private key is used to sign the document and its public key is used to verify the signature.* Only the sender can sign as his private key is "private". Easy to verify as his public key is "public"
Certificates (*): It bears the digital signature of certain certificate authority whose identify is built into the operating system. Why? *The OS can verity the legitimacy of the digital signature, hence the legitimacy of the certificate, and hence the identify of the certificate holder. The certificate also contains the public key of the certificate holder.*
https/SSL: Secure protocols over the Internet, based on certificate
Wireless Security: Transmission is not encrypted by default. Solutions? Encrypt it (WEP (not recommended), WPA1,

WPA2), smart card / USB token, use wired network for sensitive communication.
Steganography (*): An alternative to encryption for secrecy, Hides existence of message, (Using only a subset of letters/words in a longer message marked in some way, Hiding data in graphic image or sound file, Using invisible ink), Drawbacks (High overhead to hide relatively few info bits, Becomes useless once comprised)
Software Vulnerability: Commercial software contains flaws that create security vulnerabilities, Patches
Business Value: Inadequate security and control results in lost of business and may create serious legal liability, A sound security and control framework that protects business information assets can thus produce a high return on investment
Legal Requirements: CSOX, ERM
Security Risk Assessment: Determine level of risk to the firm in the case of improper controls: Type of risk, Probability of occurrence, Damage
Security Policy (*): Acceptable Use Policy (AUP), Authorization Policies, Business Continuity Plan, Technical measures used to enforce the policies
Business Continuity Plan (*): Getting the business up and running after a disaster, Business measures, Technical measures
Security Auditing: A comprehensive assessment of a company's computer security policies, procedures and technical measures (Penetration test: simulated attack), Risk assessment is done before security implementation while auditing is after its implementation and should be done from time to time
Human Knowledge: User's lack of knowledge or human ignorance is the single greatest cause of computer security breaches! (Social engineering)

6 IT Infrastructure

Why understanding IT is important: Not possible to make good decisions if you do not understand the options.
Important to understand security: Social engineering breaches can damage your company's reputation and brand Understand the structure of company's security
IT Infrastructure (*): The shared technology resources that provide the platform for the firm's information system applications (Includes investment in hardware, software, and services (such as consulting, education, and training))
Hardware Basics (*): Input, output, control and arithmetic and logic unit (CPU), storage, motherboard, Adaptor and driver (software), Binary, transistor, frequency (clock speed, cycle speed), word length, chip density
Hardware Components (*): CPU, Primary/Secondary Storage, Input/Output devices, Communication devices; KNOW THEM ALL
Pipelining: Idea borrowed from assembly line; RISC
Memory Storage: Speed and cost are proportional, speed and size are inversely proportional; arranged from fasted to slowest: CPU registers, Cache, RAM, Hard Drive, Off-Line storage
Secondary Storage: Also known as external memory/storage, differs from primary storage in that it is not directly accessible by the CPU (Magnetic Drive / Hard drive (HD, or HDD), Optical drive (CD/DVD drive, BD drive), Flash drive (SD, MMC, jump drive, USB drive)), Data copied to primary storage before being processed by CPU, Slow, cheap and non-volatile (permanent)
Primary Storage: Often called RAM (Random Access Memory) because it can access directly any randomly chosen location in the same amount of time (DDR, DDR2, DDR3), Volatile, Stores: all or part of the software program being executed, the operating system programs that manage the operation of the computer, the data that the program is using
Connections to the Computer: All peripheral devices (located outside the central computer unit) must be connected to the central computer unit through a port, A serial port sends a signal along a cable one byte at a time, A parallel port sends multiple bytes at a time, Firewire permits faster transfer, USB (universal serial bus) ports allow devices to be "daisy-chained" using a USB hub, Wireless ports
Specialty Computers (*): Mainframes (For servers, support hundreds of users, Example: web server, database server), Supercomputers (For complex calculations like simulations, weather forecasting and scientific computations, Example: Deep Blue Embedded computers), Micro-controller (Example: chips in iPod, home appliance, car etc.), Portable computing devices (Example: graphing calculators); BE ABLE TO COMPARE THEM
Measures of Performance: Word length (memory), bus width (16,32,64 bit), frequency (clock rate of CPU in hertz)
Hard Drive basics: RPM, Cache, Seek time, SATA, SCSI (Regular vs. Enterprise class), The mean time between failures (MTBF) (600,000 hours for SATA, 1.5 million hours for SCSI), Annualized failure rate (AFR) (0.70%–0.78% annual failure for all installed enterprise drives), S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) (Not 100% foolproof, still need periodical backup)
7 Components of the IT Infrastructure: [1] Computer Hardware Platforms, [2] Operating System Platforms, [3] Enterprise

Applications, [4] Data Management and Storage (RAID (1-6) Storage Architecture, Data backup), [5] Network and Telecommunication Platforms, [6] Internet Platforms, [7] Service Platform, [*] Include the TCO (Total Cost of Ownership for analysis)
Technology Drivers: Moore's Law and microprocessing power, Law of Mass Digital Storage (amount of digital info is exponential (base 2) every year), Metcalfe's Law and network economics (value of a network as a function of # of networks is exponential), Declining communications costs and the Internet (Lower the cost $\implies$ more and more rely on it to conduct business)
Integration of IT: Client level: Integration of cell phones and PDAs, Server level: The integration of voice telephone and the Internet bring together two historically separate and distinct global networks (VoIP, LTE)
Grid Computing: Involves connecting geographically remote computers into a single network capable of working in parallel on business problems that require short-term access to large computational capacity (e.g. great Mersenne Prime search)
Peak Demand Management: On-demand computing (like an electric bill), Cloud computing, Load balancing (multiple computers sharing the work, operating at 60-80%)
Sketch of autonomic computing: Four routers: main router connected to a firewall, a secondary router, a "sleeping router" and a backup (running); features: self-manages (secondary takes a greater load); self-heal (connects to a backup); self-config through connection; self-protect (gets cut off from router)
Virtualization: e.g. VMWare; good for dealing with infections (contained only within WM); flexible; good for testing
Other ad hoc concepts: Open Source Software (OpenOffice), Enterprise Integration Software (legacy app to web), Web Services (XML, Java, HTML), software outsourcing (Oracle, SAP, R)
SOAP: Web services communicate over standard Web protocols - Simple Object Access Protocol (SOAP); SOA describes the architecture and SOAP is the communication protocol
Management Issues: {(Dis)Advantages of (de)centralized approach +Centralized approach > Decentralized approach in terms of cost effectiveness}; {Dis[advantages] of [de]centralized approach -Not efficient in terms of solving specific problems (related to non-IT fields)}; What IT do I need ? (Competitive forces model, Value chain benchmarking, Often rely on consulting service), Dealing with infrastructure change (Scalability), Making wise infrastructure investments (Buy or rent, TCO of technology), Management and governance (Who owns it? Who controls and manages it? SOA and service agreement)
Disposing Used Harware/Memory: e-Waster (50 tonnes/yr; 15% recycled); privacy (block storage, delete $\neq$ format, sanitizing)

7 Databases

Why Database (against traditional file storage): [1] Data integrity (reduce redundancy and inconsistency), [2] Data independence (separate program/data), [3] Security, concurrent access and crash recovery (data sharing and high availability), [4] Centralized data administration (back up and access), [5] Reduce application development time (standard software packages readily in the market)
Database: a collection of related information stored in a structured form
Database Management System (DBMS): a collection of programs that manipulate a database
Data Models: Network model (modeled data as a network), Hierarchy model (modeled data as a tree), Relation model (modeled data as a table), Object-oriented model (modeled data as objects)
Relational Database: Tables (relations (set of rows)), Attributes (columns), PK, FK
Layers of Schema: Logical, Physical (both are hidden to users), and External
Data Independence: separation of logic, storage and presentation
How to Access a Database: Manipulated via SQL
Object-oriented DBMS: Many applications need to store and retrieve text data plus drawings, images, photographs, audio and video
Issues: What data to store? How to organize it?
Limits of RDBMS: Multimedia data, Arrays, Hierarchical data
ER Diagrams (ERD): Consists of entities (persons, places, objects, events, and concepts) attributes and relationships; note ERDs can be converted to tables through a series of complex steps
Normalization: Last step in an ERD to reduce redundancy
Criteria for Good Database Design: Correctness, Completeness, Redundancy
Data Warehouse: A decision support database that is maintained separately from the organization's operational databases; it is: subject-oriented, integrated, time-varying, non-volatile
Why Data Warehouse? PERFORMANCE from database accessing (collisions between users and queries take a long time); Allows the organization to accurately identify itself (FUNCTION) with data 5-10 years back; allows unity

Warehouse vs. Mart: Enterprise warehouse: collects all information about subjects (customers, products, sales, assets, personnel) that span the entire organization (expensive and time consuming); Data Marts: departmental subsets that focus on selected subjects: Marketing data mart: customer, products, sales (faster to roll out but harder to integrate in the long run)
Online Analytical Processing (OLAP): Traditional database queries look for answers in tables (two-dimensional);) supports multidimensional data analysis, enabling users to view the same data in different ways using multiple dimensions
Data Mining: Tools for analyzing large pools of data to find hidden patterns and infer rules to predict trends
Components of Data Mining: [Example (Items purchased)] Association: Items bought together, Sequences: What is purchased next (in 3 weeks)? [Example (VIP Customers)] Classification: What are the common features among my VIP's? Use this info to look for potential VIP customers in your new customers. [Example (Customers)] Clustering: Divide your market by age, ethnicity, gender, etc. [Example (Past Sales)] Forecast: Use your past sales data to predict future gains
Databases and the Web: DB $\Longleftrightarrow$ DB server $\Longleftrightarrow$ App. server $\Longleftrightarrow$ Web server $\Longleftrightarrow$ Internet $\Longleftrightarrow$ Client with web browser
Information Policy: Specifies organizational rules for sharing, disseminating, acquiring, standardizing, classifying, and inventorying information (What data and information to store, How to store, manage and use, Who can access what)
Ensuring Data Quality: Data Quality Audit (survey of accuracy and completeness in a system); Data Cleansing (detecting and correcting data; consistency)

8 Telecommunications and Networks

Computer Network (CN): Two or more computers connected together
Components of CN: Network interface card (NIC), network operating system (NOS), dedicated server, hubs and switches (between OPCS), and routers (between networks)
Sending messages: Phone calls use circuit switching (Advantages of circuit switching: Dedicated line; will reach the destination, usually, faster; Guarantee the delivery of the service / Disadvantages of circuit switching: Not efficient in sharing network resources); Computers use packet switching (Packet switching: Cannot guarantee the delivery of the data, Packets can time out, Cannot guarantee the quality of the service (not always on time))
Building a network: How the machines are connected to each other (Topology), How the machines talk to each (Protocol), How big the network should be (Geographic scale), What transmission media to use (Wired or wireless), What services to provide (E-mail, printing, teleconference, database, file sharing, etc.)
Topologies: Star (higher cost, only one that needs hub/switch/router, broadcasting/routing, PoF (point of failure) is hub/switch), Bus (low cost, broadcasting, PoF is bus), Ring (low cost, forwarded in one direction, PoF is link/machine); KNOW WHAT EACH LOOKS LIKE
TCP/IP: A communication protocol (or network protocol) is a set of rules governing information exchange in a network, Transmission Control Protocol/Internet Protocol (TCP/IP) is the de facto standard for most networks including the Internet, Each computer is assigned and identified by an IP address
4 Layers of TCP/IP: Application $\Longrightarrow$ Transport $\Longrightarrow$ Internet $\Longrightarrow$ Network Interface (Use mailing a letter analogy)
Network Classifications: LAN (<500 m), CAN (<1000 m), MAN (city of metropolitan area), WAN (transcontinental or global area)
Data Transmission: Twisted wire – most common in LAN / Coaxial cable – like cable TV / Fiber optics and optical networks – fast, massive bandwidth / Wireless transmission media and devices – more and more popular in LAN [speed measured in Kbps, Mbps, Gbps (in bits)]
Wireless Communication: Bluetooth (no hub/switch, 10m, limited mobility, few Mbps), Wi-Fi (access point, 100m, limited mobility, 600 Mbps), Wimax (Wimax Base Station, 50km, 100km/h mobility, 100Mbps), Cellular network (Radio tower, 50km, couple 100km/h mobility, Couple Mbps)
Other Wireless Mediums: RFID, LTE (Europe), 3G/4G (North America)
The Internet: A collection of local, regional, national and international computer networks linked together to exchange data and information, Uses TCP/IP and client/server architecture
Internet Addressing: IPs are difficult to memorize, which is why we use domain names; requires a DNS service to parse the names back to IPs
Internet Services: Web, E-mail, chat, instant messaging, forums, wiki, social network, video conferencing, Webcast, Search engine search engines, marketing, File sharing, Peer to peer (P2P), Online entertainment, Internet telephony: VoIP, Virtual Private Networks
Web vs. Internet: Internet = hardware/software infrastructure providing connectivity between computers, Web = collection of documents (websites composed of webpages (HTML)) that require web browsers to view them
Concepts to keep in mind: Google page rank algorithm, the increased popularity of social networking, VoIP (voice over IP) sent in packets

Virtual Private Networks (VPN): Create a secure network that uses similar architecture as the internet to provide remote access (before VPN was T-Lines ($1-10 k))
The Future of the Internet: Web 2.0, IPv6 (to replace IPv4 and prevent ARPAgeddon), Internet2, CA*net4
Other Internet Infrastructures: Corporate Network Infrastructure, Hybrid Enterprise-Wide System Systems

9 Knowledge Management Systems

Value of Knowledge: Tesla vs. Ford (furnace example)
Why Knowledge Management (KM)? Cost of mismanagement, Loss of system knowledge, The exponential growth of digital media, We need better way to ... manage the data, information and documents randomly and costly floating inside an organization; Extract, store and share knowledge, expertise and experience embedded deep inside employees' heads; Harness the external data and information freely floating around an organization
What is Knowledge? No clear definition. Two examples: "Knowledge is justified true belief", "Knowledge is information in action"
Two Types of Knowledge: Tacit (Implicit) and Explicit (most of our knowledge is tacit)
What is KM? *Knowledge management* is an integrated approach of identifying, capturing, evaluating, and sharing an organization's explicit and tacit knowledge assets to meet mission objectives. The *objective* of KM is to connect those who know to those who need to know and leveraging knowledge transfer from one-to-many. Knowledge is a source of wealth for an organization, just like labor, land, or financial capital and is a "big deal" in the industry.
The 3 Stages of KM: [1] Knowledge Network (developing a shared environment), [2] Search Engine (built on information sharing and proper documentation and provide relevant information to decision making) [3] Intelligent System (The ultimate goal of knowledge management, Build on search engine with an addition of a "brain")
Challenges? Social barriers; sharing gives the illusion that it diminishes one's value, Documentation problems, No time to share, [3] is not widely used
Relevancy: Relevancy from a human standpoint is: user-dependent time dependent, geography dependent
Aspects of a Successful KM: Activate the executive management level, Engage the whole organization, Develop organizational learning, Embed KM in processes, products, systems, and controls, Make it versatile so that it can be transferred formally, through training, or informally, by way of workplace socialization
Organizational Changes: Knowledge management efforts can completely collapse boundaries (Lines between departments and operating divisions blur), A knowledge management system cannot work through hierarchies (Individual and team learning processes must become the true driver of organizational learning)
Global Challenges: Knowledge of certain topics may have been around for many years, but it is the accessibility to that knowledge that is the problem

10 MIS Development

How to develop a MIS? Compute science approach - system development life cycle (SDLC) (Make sure the system is developed according to specification and functions properly), Business approach - project management (Ensure that the project is completed in time, within budget and to the customer's satisfaction)
SDLC: Analysis (user's requirements – what is the solution?), Design (how to implement the solution), Implementation (code, test, document S/W components), Deployment (install and integrate H/W and S/W), Maintenance (support, maintain and enhance the IS) ; INVESTIGATE THE DETAILS IN CHAPTER 10
Analysis: Answer the questions: What will the system do? Who will use the system? When and where will it be used?
Deisgn: Decides how the system will operate
Implementation: The system is actually built and tested in this phase
Deployment: Old system is turned off, New system is turned on
Maintenance: Provide user support, Fix bugs, Improve or upgrade the system
Summary: Check out Table 9-2 (s. 20) on Chapter 10
Alternatives to SDLC: Parallel Development, Rapid Application Development (RAD), Object-oriented System Analysis and Design (OOSAD)
Missing from the CS Approach? Having a working product does not necessarily mean success! Time management, Budget management, Risk management, Change management

Statistics: 31% of IT projects cancelled before completion, 52.7% of completed projects cost over their original estimates, 1 in 8, the number of projects that can be considered truly successful
Reasons? Inadequately trained and / or inexperienced Project Managers, Failure to set and manage expectations, Poor leadership at any and all levels
Plan the Work: Clearly define the project objective. Divide and subdivide the project into work break down structure. Define the specific activities that need to be performed. Graphically portray the activities in a network diagram. Make a time estimate. Make a cost estimate. Calculate a project schedule and budget.
Work the Plan: Establish a baseline plan. Monitor progress. Measure actual progress and compare it to planned progress. Take corrective action if the project is behind schedule, overrunning the budget, or not meeting technical specifications
Other Topics in Project Management: Project selection, Communication management, Scope management, Resource management, Risk management, Change management