Business Strategy and Technology

Chapter 1 and 2
Finance, accounting, marketing,
- search engine marketing
- search engine optimization
- customer relationships management
- personalization system

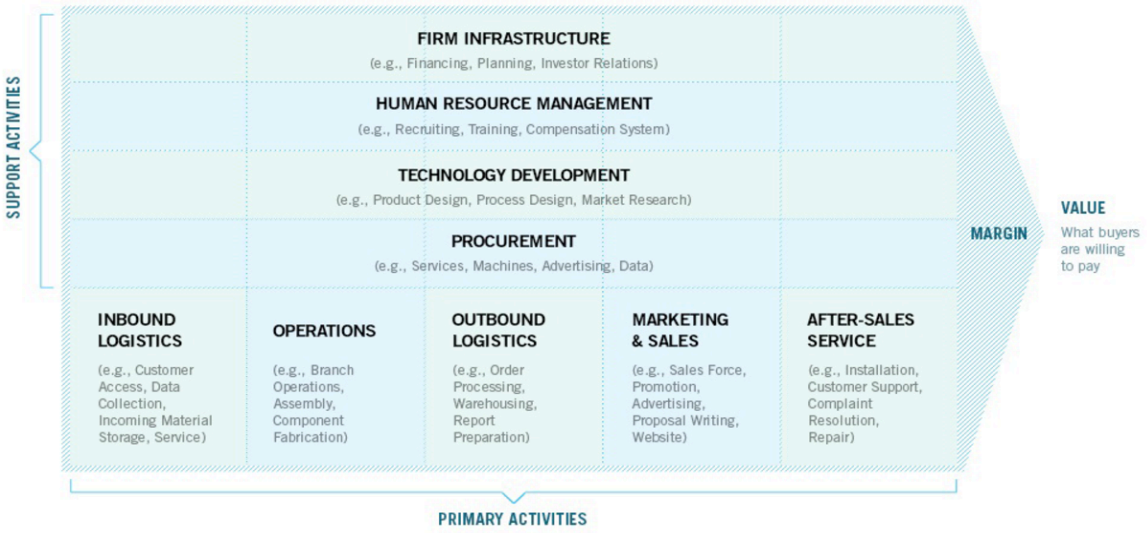
Can provide info of the people
ability to track customers and analyze can have return of investments
Operations, HR, information systems careers (job markets)
- As technology becomes cheaper and more powerful, it pervades more industries and is becoming increasingly baked into what were once non-tech functional areas.
- Technology is impacting every major business discipline, including finance, accounting, marketing, operations, human resources, and the law.
- Tech jobs rank among the best and highest-growth positions, and tech firms rank among the best and highest-paying firms to work for.
- Information systems (IS) jobs are profoundly diverse, ranging from those that require heavy programming skills to those that are focused on design, process, project management, privacy, and strategy.

MIS = Management Information Systems
MIS is the development and use of information systems to help businesses achieve goals and objectives
computer based IT
Hardware, software, procedures, people, data

What's an organizational Information System?
An interaction between people, technology, and rules within a business.

2.1 intro to strategy

as a manager, the ability size up a firm's strategic position and understand its likelihood of sustainability is one of the most valuable and yet most difficult skills to master.
competitive advantages -> change product, change business Strategy
- cut cost - reduce price - increase features of a product or service is created in
Michael Porter



primary activities are:
- Inbound Logistics - involve relationships with suppliers and include all the activities required to receive, store, and disseminate inputs.
- Operations - are all the activities required to transform inputs into outputs (products and services).
- Outbound Logistics - include all the activities required to collect, store, and distribute the output.
- Marketing and Sales - activities inform buyers about products and services, induce buyers to purchase them, and facilitate their purchase.
- Service - includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered.

Secondary activities are:
- Procurement - is the acquisition of inputs, or resources, for the firm.
- Human Resource management - consists of all activities involved in recruiting, hiring, training, developing, compensating and (if necessary) dismissing or laying off personnel.
- Technological Development - pertains to the equipment, hardware, software, procedures and technical knowledge brought to bear in the firm's transformation of inputs into outputs.
- Infrastructure - serves the company's needs and ties its various parts together, it consists of functions or departments such as accounting, legal, finance, planning, public affairs, government relations, quality assurance and general management.

- so many firms suffer aggressive, margin-eroding competition because they've defined themselves according to operational effectiveness rather than strategic positioning.
tech can by copied quickly
Firms must invest in techniques to improve quality, lower cost, and generate design-efficient customer experiences. But for the most part, these efforts can be matched.
resource-based view of competitive advantage

- (1) valuable, (2) rare, (3) imperfectly imitable (tough to imitate), and (4) non-substitutable.
- Technology can be easy to copy, and technology alone rarely offers sustainable advantage.
- Firms that leverage technology for strategic positioning use technology to create competitive assets or ways of doing business that are difficult for others to copy.
- True sustainable advantage comes from assets and business models that are simultaneously valuable, rare, difficult to imitate, and for which there are no substitutes.

2.2 Powerful Resources

Value chain - set of activities through which a product or service is created and delivered to customers.
primary components
- inbound logistics - get supplies and resources from suppliers
- operations - turning inputs into products and services
- outbound logistics - deliver products and services to consumers…
- marketing and sales - customer engagement, pricing, promotion…
- support - service, maintenance and customer support

secondary components
- firm infrastructure - functions that supports the whole firm - management, planning, finance…
- HR management - recruiting, hiring, training, and development
- technology / R and D - …
- procurement - sourcing and purchasing functions

Brand - well known brand = lower search cost
scale - advantage of growing business

Commodities - products or services that are nearly identically offered from multiple vendors.
Differentiation - need to be different as a product
network effect - the value of the product is linear to the number of people using it
Distribution channels - the path through which products or services get to consumers

- The value chain can be used to map a firm's efficiency and to benchmark it against rivals, revealing opportunities to use technology to improve processes and procedures. When a firm is resistant to imitation, its value chain may yield sustainable competitive advantage.
- Firms may consider adopting packaged software or outsourcing value chain tasks that are not critical to a firm's competitive advantage. A firm should be wary of adopting software packages or outsourcing portions of its value chain that are proprietary and a source of competitive advantage.
- Patents are not necessarily a sure-fire path to exploiting an innovation. Many technologies and business methods can be copied, so managers should think about creating assets like the ones defined above if they wish to create truly sustainable advantage.
- Nothing lasts forever, and shifting technologies and market conditions can render once strong assets obsolete.

- transaction processing system: Systems that record a transaction or some form of business-related exchange, such as a cash register sale, ATM withdrawal or product return.
- transaction: Any kind of business exchange.
- loyalty card: System that provides rewards in exchange for consumers, allowing tracking and recording of their activities. Enhances data collection and represents a significant switching cost

3 types of Capital:
1. Physical - investment of resources 2. Social- invest in social relations 3. Human- invest in human knowledge
Capital adds value in 4 ways:
1. Information 2. Influence 3. Social Credentials 4. Personal Reinforcement
Measure value of social capital:
- Number: of relationships - Strength: of relationships - Resources: controlled by those related

2.3 Barriers to Entry, Technology, and Timing

no matter if you start early or following others,
If a firm can use a time and technology lead to create valuable assets that others cannot match, it may be able to sustain its advantage. But if the work done in this time and technology lead can be easily matched, then no advantage can be achieved, and a firm may be threatened by new entrants

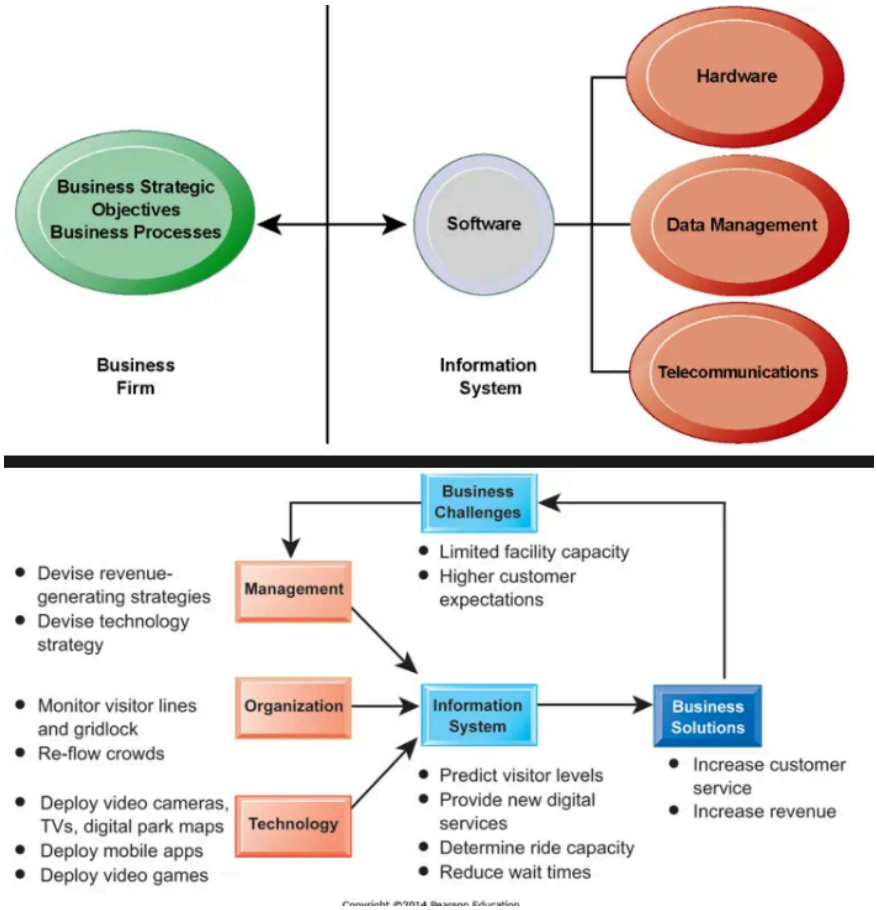
2.4 The five forces of industry competitive advantages

- the intensity of rivalry among existing competitors
- the threat of new entrants
- the threat of substitute goods or services,
- the bargaining power of buyers
- the bargaining power of suppliers

In markets where commodity products are sold, the Internet can increase buyer power by increasing price transparency.
The more differentiated and valuable an offering, the more the Internet shifts bargaining power to sellers.

Ways to improve business without technological change:
1. Adding resources
2. Adding specialization
3. Changing/eliminating unproductive activities

Specifically, business firms invest heavily in information systems to achieve six strategic business objectives:
1. operational excellence;
2. new products, services, and business models;
3. customer and supplier intimacy;
4. improved decision-making;
5. competitive advantage; and
6. Survival.



From a business perspective, information systems are part of a series of value-adding activities for acquiring, transforming, and distributing information that managers can use to improve decision-making, enhance organizational performance, and, ultimately, increase firm profitability.
A Business Process: a set of activities that are necessary to complete a response to a stimulus applied to an organization
- Activities use and transform resources and information of one type into resources and information of another type
- Follow rules and procedures
- Can be manual, automated, or combination
- Resources are items of value: An organization uses resources to provide value for its customers and successful outcomes for the owners.
- Facilities store resources (and information) within a business process.

Business Process Design

- Business Process Automation (BPA) - Make stuff digital
- Business Process Improvement (BPI) - View, analysis better,
- Business Process Transformation (BPT) - dramatic improvement and change

sustainable competitive advantage: Financial performance that consistently outperforms industry averages.
- Difficult to achieve due to the rapid emergence of new products and new competitors.
- Operational effectiveness: Performing the same tasks better than rivals.
- strategic positioning: Performing different activities than rivals, or the same activities in a different way.

Valuable
Rare
Imperfectly imitable
Non-substitutable
- limitation-resistant value chain: A way of doing business that competitors struggle to replicate and that involves technology in a key enabling role.
- value chain: Set of activities through which a product or service is created and delivered to customers.

Functional System
- Facilitate the work of a single department or business function. May also be called functional silos because they work independent of others.

Cross-functional systems
- These systems integrate data and business processes across different departments and systems

Inter-organizational systems
- Are systems that are used by 2 or more related companies. ex. e-commerce applications.

Problems with Isolated function system
- Data duplication/inconsistency
- Disjointed processes
- Limited info/lack of integration
- Isolated decision lead to overall inefficient activities
- Increased expense

Get customers

1. Marketing (attract)
2. Customer Acquisition (sell)
3. Relationship Management (support & resell)
4. Loss/Churn (Categorize)

Triple bottom line- AKA People, Planet, Profit

Make decisions + Management

Ackoff's Suggested Assumptions - 1. Managers will have no problem making decisions if they get the data they need 2. Poor decisions are made because managers lack relevant information 3. Managers know what data they need

Ackoff's Counterarguments - 1. Too many possibilities exist 2. Managers suffer because of an abundance of information 3. Managers are often not sure what data they require

Crowdsourcing - Reaching out to people of the general public to help assist with a service.
GOOD - Cheaper, faster service - skill exposure,learning new skills, and earning marginal income
BAD- Participants work for low income - Replacing professional leads to reduction of wages.

4 dimensions of IS project success:
-Resource constraints: does it meet time & budget requirements?
-Impact on customers: What do customers receive from project?
-Business Success: How high and long are the profits produced?
-Prepare the future: Is future business success likely?

5 process groups in any project (PMBOK)
1. Initiating 2. Planning 3. Executing 4. Controlling & Monitoring 5. Closing

Project Team Roles
- Business Analyst - Technical Analyst - Systems Analyst - Change management Analyst
4 main methodologies that IT professionals use to manage projects
1. SDLC 2. Rapid Application Development (RAD) 3. Object-oriented development (OOD) 4. Extreme Programming (XP)
SDLC = - Describes a phased approach to the development of an information system
SDLC = 1. define goals and objectives 2. define requirements 3. identify alternatives 4. design chosen alternatives 5. Construction 6. maintain the system

SDLC planning phase - involves users managers and tech development - identify possible solutions - cost/benefit analysis of possible solutions - set goals for new systems
SDLC analysis phase - Project team conducts a thorough evaluation of current system through interviews, questionnaires, and observations
SDLC design phase - hardware req - inputs/outputs - screen and interface - operating instructions
SDLC implementation phase - build system and integrate components - install necessary hardware - test the system - change over to new system - train users
SDLC maintenance phase - meet standard, bug fix…

System Purchasing Process
1. Definition phase 2. Feasibility Analysis 3. Requirements definition 4. Short list of packages 5. Establish evaluation criteria 6. Develop and distribute RFP 7. Choose Package 8. Negotiate Contract
Roles In Purchasing an application package:
- User sponsor: High level executive, oversees the purchase - User Champion: User who pushes the project forward - Project Manager: Manages the process - Vendor - Contract Specialist: Technical and legal advice

Outsourcing - - losing confidential info - Losing control over future developments - losing learning opportunities - No Easy Exit

3 types:
Time and arrangement: Pay for what is needed to get the job done.
Fixed-Price: Certainty regarding payment, but little flexibility in delivering IS support
Value-added: Outsourcer shares in benefits gained from the system.

- keep communication open
- Define and stabilize requirements
- View relationship as partnership
- Select vendor carefully
- Assign someone to manage
- Dont' outsource what you don't understand
- Emphasize flexible requirements.

Enterprise Architects need to balance 1. Business Strategies 2. Operations 3. Platforms

IS Governance - IS governance requires those responsible (ie, executives and IS officers) to make sure that the organization uses required information systems while extracting the best value from them.
IS audit - Examination of a company's procedure of how they collect, store, process and retrieve data.

Primary goals of green IT: - Improve energy efficiency - Promote recycling - reduce use of hazardous materials - Promote sustainability

Software, DATA, AI

1. Off the shelf (Buy and use) 2. Off the shelf with adaptation (buy and customize) 3. Lease (short term license) 4. Tailor made (build yourself

5 phase process in developing a system
1. System definition 2. Requirement analysis 3. Component design 4. Implementation 5. System Maintenance.

active systems that are referred to as production systems
- stability - predictability - accountability - reliability - security

Implementing new or update software
pilot installation- implements the entire system in a limited portion of the business
phased installation - the new system is installed in phase across the organization
parallel installation - system runs parallel with the old one until the new system is tested and fully operational
plunge installation - shut down the old one and implement the new one

the iron triangle - cost - time - quality

Operating System
- Most computing devices (enterprise-class server computers, PCs, phones, set-top boxes, video games, cars, the Mars Rover) have an operating system.
- Some products use operating systems provided by commercial firms, while others develop their own operating system. Others may leverage open source alternatives (see Chapter 15).

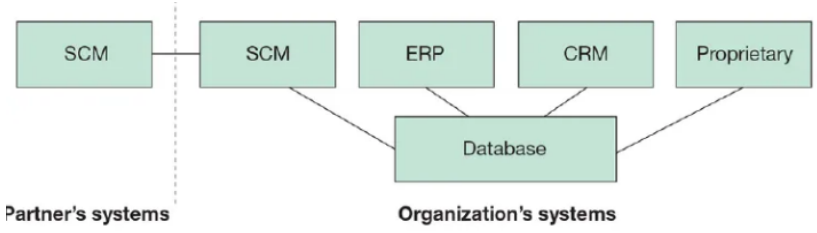
- Embedded systems are special-purpose computer systems designed to perform one or a few dedicated functions, and are frequently built into conventional products like thermostats, door locks, cars, air conditioners, industrial equipment, and elevators.
- Embedded systems can make products and services more efficient, more reliable, and more functional, and can enable

Industry standard Process - implementing ERP…
Processes built into business applications from companies such as oracle or SAP
GOOD
- Integrate activities across departments
- Save costs of tailor-made process design
- enables the company to benefit immediately from tried and tested cross-departmental processes
BAD:
- May be very different from existing processes
- May require the org. to change. This may disturb employees.

ERP
- Cross functional system, support every part of the company, very expensive, make everything easter to track and organize, reduce time, real time insight.
- Sales - Inventory - Manufacturing - Human Resources - Purchasing - Order Tracking - Decision Support

CRM, SCM, BI, SRM
- customer relationship management (CRM) systems used to support customer-related sales and marketing activities
- supply chain management (SCM) systems that can help a firm manage aspects of its value chain, from the flow of raw materials into the firm through delivery of finished products and services at the point-of-consumption
- Facilities, Transportation, Inventory, Information
3 factors of information (in supply chain)
1. Purpose 2. Availability 3. Means
3 fundamental IS's involved in supply chain management:
1. SRM 2. Inventory 3. CRM

- business intelligence (BI) systems, which use data created by other systems to provide reporting and analysis for organizational decision-making
Major ERP vendors are now providing products that extend
- database management system (DBMS)- Sometimes referred to as database software;



Supplier Relationship Management (SRM)
- Business process for managing all contacts between org. and suppliers.
- Supplier is any organization that sells something to org. with SRM app.
- Supports inbound logistics primary activity and support activity.

GOOD - Reduce costs - Increase speed - Reduce size and cost of inventories - Improve delivery scheduling - Fix bullwhip effect - Don't optimize supply chain profitability

Software Development Methodologies
Software development methodologies (sometimes referred to as the software development lifecycle, or SDLC) are methods to divide up tasks related to software creation and deployment into tasks targeted at building better products with stronger product management guidelines and techniques.

The **waterfall method** (the classic, but increasingly out-of-favor approach) is a relatively linear sequential approach to software development (and other projects).

The **agile development** approach (and variants) has become a dominant software development methodology. Agile targets the weaknesses of waterfall, tackling work continually and iteratively, with a goal of more frequent product rollouts and constant improvement across smaller components of the larger project.

Scrum is an approach to organizing and managing agile projects and is worth mentioning due to its popularity.

Cost of Ownership and the Cost of Tech Failure
- Poor goal setting, including a lack of clarity or ability to achieve goals
- Weak project leadership and project management
- Nonexistent or limited executive commitment
- Poorly forecast resource needs and inadequate access to required resources
- Project complexity
- “Scope Creep” or changing and increasing requirements during project development
- Ineffective project reporting and poor communication across constituents that include the project customer, end users, developers, and others in firm and IS operations
- Inappropriate technical choices, including immature technical offerings
- Inadequate testing and deployment procedures that should catch flaws before major rollout
- Internal and external politics, squabbling, and misalignment of priorities among stakeholders
- Time and delivery pressures that encourage corner cutting, ethical lapses, or other design weaknesses

Open source:
lower cost for company using it
difficult to install and maintain in large projects
- update community suggestion or response to push requests
anyone have different versions
- higher ownership costs
no control, not user friendly

Database
Big data - The collections, storage, and analysis of extremely large, complex, and often unstructured data sets that can be used by organizations to generate insights that would otherwise be impossible.

- **business intelligence (BI):** A term combining aspects of reporting, data exploration and ad hoc queries, and sophisticated data modeling and analysis.
BI have 1. Group Decision Support System (GDSS) 2. Reporting Systems 3. Data-mining Systems 4. Knowledge Management Systems 5. Expert systems

- analytics: A term describing the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact based management to drive decisions and actions.

- machine learning: A type of artificial intelligence that leverages massive amounts of data so that computers can act and improve on their own without additional programming.
- dynamic pricing: Changing pricing based on demand conditions.

Data
Business understanding - Business strategy - Understand product - understand population and user - identify problems
Data acquisition - Research, data collecting
Data clean up - find useful data - identify damaged data - sort
Data modeling and analysis - most important - AB test, statistics, math
Deployment - show insights - support or update business strategy or marketing

Data Mart - Is a data collection that is created to address the needs of a particular business function.
Unsupervised data mining - - analysts do not create a model or hypothesis - Apply data-mining technique to the data - Hypothesis created after analysis
Cluster analysis - Is an unsupervised data mining technique where statistical techniques are used to to identify groups of entities that have similar characteristics. Used to find groups of similar customers
Supervised Data mining- Model is created before analysis - Statistical techniques applied to data to estimate parameters of the model

data → information → knowledge
- database: Single table or a collection of related tables.
- database management systems (DBMS): Software for creating, maintaining, and manipulating data (also known as database software).
- structured query language (SQL): A language used to create and manipulate databases.
- database administrator (DBA): Job title focused on directing, performing, or overseeing activities associated with a database or set of databases

columns = field
row = record

relational database = related base on common key
block chain
a chain of blocks whereby each block contains the hash value of the previous block
Hash function: A mathematical function that maps any data to a value with a fixed number of characters. Same data always generate the same hash - encryption

data storage
data warehouse: A set of databases to support decision-making in an organization.
data mart: Database or databases focused on addressing the concerns of a specific problem or business unit. Marts and warehouses may contain huge volumes of data.
data lake: A catch-all term for storage and access technologies used in Big Data.
Hadoop: A set of mostly open source tools to manage massive amounts of unstructured data for storage, extraction, and computation.
Data cloud
- Flexibility: Data lakes can absorb any type of data, structured or not, from any type of source.
- Scalability. can work together for a single calculation
- Cost-effectiveness: May further reduce hardware and management costs
- Fault tolerance: Big Data storage is designed in such a way that there will be no single point of failure.

Artificial Intelligence
- machine learning: Software that contains the ability to learn or improve without being explicitly programmed.
Problems with operational data:
- Dirty data - Missing values - Inconsistent Values - Data not integrated - too fine too course - too much data
Data granularity - The degree of summarization or detail
Course Data - Highly Summarized data
Fine data - Data that is too precise

- deep learning: A type of machine learning that uses multiple layers of interconnections among data to identify pattern and improve predicted results.
- supervised learning: A type of machine learning where algorithms are trained by providing explicit examples of results sought, like defective versus error-free, or stock price.
- self-supervised learning: Sometimes called unsupervised learning, where systems build pattern-recognizing algorithms using data that has not been pre-classified.
- semi-supervised learning: A type of machine learning where the data used to build models contains data with explicit classifications, but is also free to develop its own additional classifications that may further enhance result accuracy.
- neural networks: Examines data and hunts down and exposes patterns, in order to build models to exploit findings.
- expert systems: Leverages rules or examples to perform a task in a way that mimics applied human expertise.
- genetic algorithms: Model building techniques where computers examine many potential solutions to a problem.

Technology - Hardware

Moore's law
Moore's law is by Gordan Moore, co-founder of intel

- about making better processors with cheaper prices
- pays half of price and have the same speed in half a year
- OR pays the same price and have double the speed in a period of time

Moore's Law applies to the semiconductor industry. The widely accepted managerial interpretation of Moore's Law states that for the same money, roughly eighteen months from now you should be able to purchase computer chips that are twice as fast or store twice as much information.
Non Chip-based technology also advances rapidly. Disc drive storage doubles roughly every twelve months, while equipment to speed transmissions over fiber-optic lines has doubled every nine months.

As chips get smaller and more powerful, they get hotter and present power-management challenges. And at some point, Moore's Law will stop because we will no longer be able to shrink the spaces between components on a chip.

New materials may extend the life of Moore's Law, allowing chips to get smaller. Entirely new methods for calculating, such as quantum computing, may also dramatically increase computing capabilities far beyond what is available today.

Supercomputer
- Supercomputers are computers that are among the fastest of any in the world at the time of their introduction.
- Supercomputing is sometimes referred to as HPC for high performance computing, and its use varies widely.
- Modern supercomputing is typically done via a technique called massively parallel processing (computers designed with many microprocessors that work together, simultaneously, to solve problems)
- grid computing, has allowed organizations to engage in scavenging, or enlisting idle compute time from servers and desktops when they are not in use.
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Disruptive Technology
web video and movie, digital audio

- phone, computer, internet…

- Disruptive technologies (also called disruptive innovations) come to market with a set of performance attributes that existing customers do not demand; however, performance improves over time to the point where these new innovations can invade established markets.

- 3d printing - AR, VR glasses - blockchain… - Gene editing(not disruptive, new field)
- driverless car(uber drivers) - Battery tech (advancement - better waste management) - robot AI(daily tasks) - Quantum computing
- blockbusters to Netflix, digital camera to film camera

Innovator's Dilemma by Christensen
Two innovation comparison
- Sustaining Innovation: Incremental improvements to existing products or services aimed at better meeting the needs of current customers.
- Disruptive Innovation: New technologies or approaches that initially underperform in mainstream markets but eventually redefine the industry.
Why leaders fail
- Companies focus on their most profitable customers and resist adopting disruptive technologies, as they don't immediately appeal to their core market.
- Resource allocation processes favor sustaining innovations over riskier disruptive ones.
Dilemma
- companies that succeed by optimizing for their current customers and markets often become vulnerable to new entrants leveraging disruptive innovations.

Companies should invest in disruptive innovations, take risks, and adapt to emerging markets

Internet

Network effect
network effect - When the value of a product or service increases as its number of users expands

- complementary benefits: Products or services that add additional value to the primary product or service that makes up a network.
- switching costs: Incurred when moving from one product to another.
- total cost of ownership (TCO): Economic measure of the full cost of owning a product
- one-sided market: Market that derives most of its value from a single class of users.

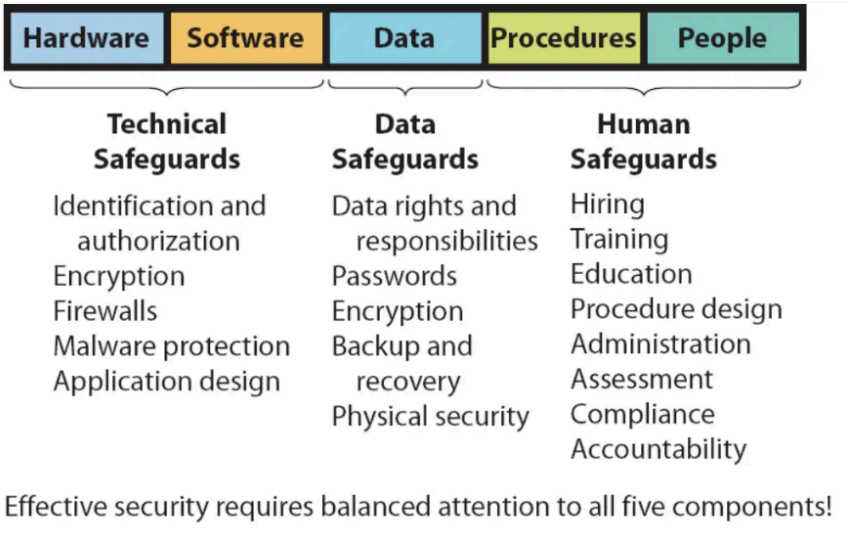
- two-sided market: Network markets comprised of two distinct categories of participant. Both need to deliver value for the network to function.
- technological leapfrogging = a theory that developing countries can bypass traditional development stages and quickly adopt new technologies to catch up to advanced economies

Markets
monopoly - one dominant seller
- CIBC
- AT&T
oligopoly - dominant by few number of seller
- xbox and playstation - sumsung and apple
Perfect competition - many seller compete for the market and similar market share

Freemium: A product with a free version, limit features.
- with paid product or subscription with more features
- Zoom - free for education - create network effect
- google drive

Security
- data harvesters: Cybercriminals who infiltrate systems and collect data for illegal resale.
- cash-out fraudsters: Criminals that purchase assets from data harvesters to be used for illegal financial gain. They might buy goods using stolen credit cards or create false accounts.
- botnets: Hordes of surreptitiously infiltrated computers, controlled remotely.
- distributed denial of service (DDoS) attacks: Shutting down websites with a crushing load of seemingly legitimate requests.
- hacktivists: Protester seeking to make a political point by leveraging technology tools, often through system infiltration, defacement, or damage.
- zero-day exploits: New attacks that haven't been clearly identified and haven't been incorporated into security screening systems.

public key encryption, certified authority, Hash encryption, 2 factor auth, biometric (finger prints face…)



Effective security requires balanced attention to all five components!

- firewalls: Control network traffic, block unauthorized traffic.
- intrusion detection systems: Monitor network use for hacking attempts and take preventive action.
- honeypots: Tempting, bogus targets meant to lure hackers.
- blacklists: Deny the entry of specific IP addresses and other entities.
- whitelists: Permit communication only with approved entities or in an approved manner.
Security problems: 1. Unauthorized data disclosure 2. Faulty service 3. Loss of access 4. Loss of infrastructure 5. Incorrect data modification
security threats:1. Malicious human activity 2. Human error 3. Natural events

Phishing = Pretexting = Spear Phishing(personlize) = Spoofing

Internal Activity = According to research data theft or leakage of private companies is done by employees

deadly sins leading to security breaches
1. Not measuring security network 2. Thinking compliance equals security 3. Overlooking people such as employees 4. Too much access for too many people 5. Lax patching procedures 6. Lax logging and monitoring 7. Reject KISS (Keep It Simple for Security
How to solve?
- involves hardware and software - User name and passwords - Smart cards (PIN) - Biometric Authentication (fingerprints) - Single sign on for systems - Encryption - Malware Protection (viruses, worms, spyware, adware)

e-Commerce, Social Media, Peer Production
- Electronic business: Electronic buying and selling, electronic advertising, groupware, email, electronic distribution.

- Electronic commerce: buying and selling over electronic channels (exchange of value).
Online Retail (B2C) - amazon, B2B Transactions - factory, Digital Products and Services - kindle books

- Internet commerce: buying and selling over the Internet.
Online Marketplaces - eBay or Etsy - individual sellers, Subscription-Based Services - netflix, Online Payment Systems - PayPal === internet transaction

- Web commerce: buying and selling over the Web.
E-commerce Websites, Online Shopping=====webpage…

- Ubiquity : available about everywhere and at all time! Marketspace – extend boundary and reduced transaction costs
- Global Reach : potential market size ~ roughly equal to the size of the world's online population!
- Universal standard : lower market entry costs and reduce search costs
- Richness : refers to the complexity and content of a message. Web eliminate previous trade-off between richness and reach, delivering rich messages with text, audio and video simultaneously to large numbers of people
- Interactivity : allows an online merchant to engage a consumer in ways similar to a face-to-face experience but on a massive, global scale

Benefits	Issues?
- Overcome geographical limitations - targeted communication - Eliminate travel and costs - Easy comparison shopping - Locate unique products faster Dynamic pricing Disintermediation : removing the middleman	- Channel conflict - same product from different platforms - price conflict - Logistics expense - more on shipping - Customer service expense - Showroom - less - tax…? - technology infrastructure - Security implications

Information Density : the total amount and quality of information available to all market participants, consumers, and merchants alike.

Personalization/Customization : cozy relationship can now be extended to the Internet through a variety of personalization and customization technologies.
Social technology : new internet social and business models enable content creation and distribution and support social network

Component	On-Premises	Infrastructure as a Service (IaaS)	Platform as a Service (PaaS)	Software as a Service (SaaS)
Applications	You Manage	You Manage	You Manage	Other Manages
Data	You Manage	You Manage	You Manage	Other Manages
Runtime	You Manage	You Manage	Other Manages	Other Manages
Middleware	You Manage	You Manage	Other Manages	Other Manages
O/S	You Manage	You Manage	Other Manages	Other Manages
Virtualization	You Manage	Other Manages	Other Manages	Other Manages
Servers	You Manage	Other Manages	Other Manages	Other Manages
Storage	You Manage	Other Manages	Other Manages	Other Manages
Networking	You Manage	Other Manages	Other Manages	Other Manages

Type
- Business-to-consumer (B2C): Most visible. E.g. Walmart
  - portals -web search, news, mail services
  - E-tailing (electronic retailing)
  - content provider
  - Transaction Brokers
  - market creator
  - service provider
  - community provider?
  -
- Business-to-business (B2B): Greatest dollar amount of transactions. E.g. Alibaba
- Consumer-to-consumer (C2C): Greater geographic reach. E.g. Craigslist
- Consumer-to-Business (C2B): Individual consumers offer products or services to businesses, usually through a platform. E.g. Freelancer
- Mobile commerce or m-commerce: using mobile phones and wireless devices
- Social commerce: It leverages the power of social networks to facilitate e-commerce transactions. E.g. Facebook Marketplace

Revenue models
Advertising revenue model - provides forums for advertisements and receives fees from advertisers.
Affiliate revenue model - receive a referral fee or percentage of the revenue from any resulting sales, such as offering special deals to its members or direct potential customers to make a purchase
Data Monetization model - Commerce platforms can collect valuable customer data, such as browsing habits, preferences, or demographics. Data then sold
Subscription revenue model - disinclination of users to pay for content on the web
Transaction fee revenue model - Receive fee for enabling or executing a transaction

Sales revenue model - Derive revenue by selling goods, information, or services to customers
Drop-shipping revenue model - Revenue is generated through the difference between the retail price and the wholesale cost of the product.
Free/Freemium Revenue Model - Offer basic services for free, charge a premium for advanced or special features

Internet
- start from CIrcuit Switched network = telephone system.
- packet switched networks. Idea introduced in CERN in 1969, HTTP started in 1991.

Application layer - HTTP - allows interactions with transport layer
Transport layer - TCP UDP - Ensures transmission arrives in order and without error
Internet layer - IPv4, IPv6 - Establish connection, routing and addressing
Link layer - MAC - Physical transmission of raw bits

IP - internet protocol. Backbone server from the world connects together
DNS - domain name system - client server application that gives IP address a human readable names
Top level domain - such as .com, .org… or by country .ca, .us…. - assigned with a special purpose.
13 root servers that stores locations of TLD, and DNS
TCP protocol - transport layer, addressing and multiplexing, complete reliability, flow control
- Connection setup, error control, flow control and congestion control
- Use 3 way handshake to establish connection
HTTP protocol - for communication and data transfer between a user's web browser (or other client software) and a web server.
Request method - GET, HEAD, POST, PUT, DELETE… and status code = 404, 500

URL = protocol, domain, path…

Application

Netflix
First launched in 1998 in Scotts Valley, California, follows amazon IPO selling books in 1997.
Founded by Reed Hasting and Marc Randolph.
70 million monthly user currently

1st period ==========
- find something similar to book that can sell online, they found DVD
- Monthly payment, rent some DVD, return them before get new ones.
- like yearly payment in the libraries.

- Becomes extra popular since DVD is used by majority of the public in 2000s
- IPO in 2002
- by 2005, 600 million monthly users

2nd period ==========
- youtube starts in 2005 - same entertainment through video

- Felt competition, through that public just want to see the content, not care about the resolution too much
- internet boom
- can replace the DVD

- A problem they face is that popular content will always at the front, but netflix bought those including unpopular ones.
- recommendation system - early recommendation is based on rating.
- found some movie that some movie won't have a high rating, but a lot of people still watch them
- Aspirational preference and revealed preference
- by comparing a random romance themed movie and Shakespeare's midsummer night. Most people would believe that midsummer night would be better, people will watch a random romance themed movie just to relax on a friday evening
- shakespeare is aspirational preference
- romance movie is revealed preference

- Netflix spend a lot of money into recommendations, such as hosting competition…
- increase popularity and kept user in th e platform by 10%

3rd period==========
2011
- Content creator
- first move to supper this strategy is to film House of cards
- spend more than 100 million on two seasons
- Brought huge popularity, about 10 million new viewers
- The reason behind to be a content creator is by data
- new strategy that is different from other content creator is they release all episodes one the first day and let the user watch all the episodes once, which is also called binge viewing
- First success brought more successful TV shows that kept the user in Netflix.
- Another well known TV shows is Squid game

During covid, the average time that all active user watch is 3.2 hours each day.
- Another important factor is other streaming provider that are willing to spend more money to have exclusive right to stream such as hulu have dreamwork, or disney and disney+
- If netflix don't own the entire right of a TV show, the original owner can remove their content from netflix whenever they want

First by introducing everything for free, which can bring a lot of users.
- Then can use ads to generate profit, or have some additional features for users to pay

Netflix has always been a paid entertainment. And it uses the internet to spread its service.

Their business goal has always been customized store for each subscriber and to generate personalized recommendation for more than 20 years.

ZARA
Business Strategy
- radically reconfiguring the supply chain and creating the fast-fashion category
- Reduced inventory costs
- Customer co-creation - zara listen to customers' suggestion
- Always provide cloth with treading design
- Similar product with high-end fashion but has a price aline with majority of population

- Just in time design and production
- business model is based on vertical integration
- Zara owns and controls every parts of the supply chain

ZARA and H&M is similar

ZARA's parent company Inditex

Companies like LV and others under LVMH, are selling the brand, people who purchase it also gain an identity. On the other hand, if a luxury brand reduces the price of its product, less people will purchase it. An example is the brand "Coach"

And Zara is selling "speed", and "cheap", people who purchases ZARA don't need an "identity".

Fashion industry operating model
Creation = design
- Big brands spend a lot of money on designer to design collections of clothes
- Zara hires cheap designers to take ideas from big brands and produce their own, and make it easier to mass produce.
- Copyright? Not for clothing, increase marketing

Production
- material are extreme expensive for big brands, such as a animal skin, natural silk
- big brands also produced by hand, in place where labour fees are high.
- zara uses artificial materials that reduce price
- produced in place where labour fees are low and fast

Marketing
- Since it is fast, which makes people to buy more, because it always have new products
- Ads - 40% on ads and catwalk(hire model in victoria secret) by LVMH
- zara spends less than 2% in their marketing - no ads
- all money are used to build more stores
- big brands don't want to open their store next to zara, but zara open their store next to big brands to have more effective marketing

Feedback

What takes months or seasons for other companies, Zara can do it in less than a month. Which have more than 12,000 new product being
The fast pace targets younger generations. Similar reasons to watch shorts and reels instead longer videos

Web 1.0
- The first website ever created
- read only

Web 2.0
- Read and write content
- have interaction with the internet
- Facebook, YT…
- use free or cheap to gather user information, earn money by ads
- after so many user using the internet, its not the content that is important, its the data about the user
- but people don't want companies to use their data, therefore the introduction of Web3.0

blogs - an online publication that keeps a running chronology of entries. - long tail: Phenomenon whereby firms can make money by offering a near-limitless selection of contents and products. - trackbacks: Links in a blog post that refer readers back to cited sources. - blog rolls: List of a blogger's favorite blogs. wiki - A website that anyone can edit directly from within the browser - create common knowledge base - NPOV - natural point of view	Messaging service - can be public or private - a feature Question and Answer Sites - Knowledge sharing, discovery, learning, reputation building. - For public, can vote for the best answer - Quora, stack overflow owned media - free content for anyone from anyone - youtube is owned by google - Starbuck app is owned by Starbuck co. Earned media - not paid, but grow organically from customer efforts or other favorable publicity. - Trending video, application, products	Paid media - paid content from a group - Advertisement from youtube - Starbucks ad online. Inbound marketing - leveraging online channels to draw consumers to the firm - YT ads that lead to company's website when you click them social networks - Online community that allows users to establish a personal profile - Messaging and public discussions - info spread very fast microblogging - Short, asynchronous messaging system.

Web 3.0

- Metaverse, block chain, bitcoin, NFT, DeFi, GameFi…

Base on block chain, not only read and write, but own our own data

- not only advancement in technology, but introducing a new ecosystem. Economic system.
- no central controller, but has its own currency(bitcoin), rules…

Bitcoin - web2's relationship with web3 is same as bitcoin to current currency - block chain can be used, created and implemented by anyone and everyone - more people uses, more expensive it can get NFT - Copyright enforcement system - company uses NFT to do marketing and sell their products	- decentrualized, distributed. - no physical representation - everyone verifies everyone. - Cryptocurrencies have a reputation problem - Security concerns - open source - banks don't like this - government don't like this - central banks don't like this Security - If you forgot the password, you will never get it back - if your account got hacked and money is transferred away, you will never get it back - Ponzi scheme can happened to any company

Nvidia
- The biggest winner in AI competition
- People asses a company's AI computational power and value base on amount of Nvidia's A100 they own
- 95% of market share - World engine for AI

- Start with GPU - help 3D game
- There is so many competition, anyone with a better computation power can claim their own standard in GPU
- have a long term deal with tsmc
- First most popular GPU are Geforce series
- Signed deal to support xbox
- market share from 60% to 80% in 2022
- Like moore's law
- Nvidia support the quality of graphics in videos games
- video games support the speed of Nvidia's GPU

Intel have GPU integrated inside CPU, but is not powerful enough to compete the quality of independent GPU like N and A

CPU is calculate logic, order matters
- have 8, 64 cores
GPU is calculate large amount of small easy calculation, order not really matters
- Have a lot of cores, do calculations together

Cuda - make GPU programmable - way too much investment, and R&D - all GPu support GPU - easy to program with its library - used in all field, weather forecast, space exploration… - Monopoly - complete ecosystem **AI, GPT** - good for ML and DL - uses 1.2%power and 4%cost than CPU in ML computing - use cuda to train AL models, use Nvidia to use cuda	**Data center, computing center, and supper computer** - Offers IaaS, PaaS and SaaS - AI cloud service **Potential** - Auto - self drive - metaverse AI company fear of missing out Investors fear of missing out The CPU follows Moore's law for a long time, but recently, it grows slowly The transistor doubles every 18 month. - But CPU can grow faster than Moore's law - computing power triples every 2 years