# Introduction

Why management should participate in IS decisions:

* IS must be managed as a critical resource
* IS Enables change in the way people work together
* IS are part of almost every aspect of business
* IS enables/Inhibits business opportunities and new strategies
* IS can be used to combat business challenges from competitors

Failure to consider IS strategy when planning business and organization strategies can have one of 3 consequences:

* IS that fails to support business goals
* IS that fails to support organizational systems
* Misalignment between business goals and organization capabilities

Skills required to participate effectively in IT decisions:

* Visionary:
  + Creativity: Transform, create something new
  + Curiosity: Question and learn
  + Confidence: Believe in oneself and assert ideas at proper time
  + Focus on Business solutions: Bring insight on current business opportunities and challenges
  + Flexibility: Change rapidly and effectively
* Informational/Interpersonal
  + Communication: Ability to share thoughts
  + Listening: Ability to hear/reflect back what others are saying
  + Information Gathering: Gather thoughts of others
  + Interpersonal skills: Ability to cooperate/collaborate to achieve a common goal
* Structural
  + Project Management: Plan/organize resources effectively
  + Analytical: Breakdown a problem into its elements for understanding/analyzing
  + Organizational skills: Ability to bring together distinct elements and combine
  + Planning skills: Ability to develop objectives and allocate resources to meet them

Classic view – 4 activities performed by managers:

* Planning: Think through goals and actions in advance; actions based on a plan rather than feelings
* Organizing: Coordinate resources, direct them to attain goals
* Leading: Direct and influence subordinates, help them do their best
* Controlling: Ensure org. is moving towards goal

3 Roles of management: Interpersonal, informational and decisional:

* Interpersonal:
  + Figurehead: CIO greets touring dignitaries
  + Leader: Manager puts in long hours to motivate employees
  + Liaison: CIO works with Marketing and HR to ensure compensation supports IS
* Informational
  + Monitor: Compares milestones of projects
  + Disseminator: CIO conveys business strategy
  + Spokesperson: Represent IS at organization’s recruitment events
* Decisional:
  + Entrepreneur: Suggest new technology to increase efficiency
  + Disturbance handler: Help resolve disagreements
  + Resource allocator: Allocate personnel based on business strategy
  + Negotiator: Negotiates additional personnel for a department to complete project

Social IT: technologies used for collaboration, networking and general interaction of people over the web

Social Media: marketing and sales applications of social IT

Social Networking: Use of these types of social IT tools in a community

## Business Views

**Functional view (classical)** – based on functions:

* Accounting
* Finance
* Marketing
* Operations
* HR

Information flows vertically up and down between line positions and management, after analysis can be transmitted across other functions

**Process view (Porter):** Describe business in terms of the primary and support activities that are performed to create, deliver and support a product or a service

Inbound logistics -> Operations -> Outbound Logistics -> Marketing/Sales -> Service

* Infrastructure
* HR
* Technology development
* Procurement

Information Hierarchy:

* Data: Simple observation of the state of the world (ex: Daily inventory report)
* Information: Data endowed with relevance and purpose (ex: Inventory items below threshold sent to procurement)
* Knowledge: Information that is synthesized and contextualized to provide value.
* includes synthesis, reflection and context (ex: Procurement knowing what to order based on inventory report, labor strikes and floods)

Information System: Combination of technology (what), people (who) and process (how) that organization uses to produce and manage information.

Information Technology: Focuses only on the technical devices and tools used in the system

Infrastructure: refers to everything that supports the flow and processing of information in an organization (hardware, software, network and data).

Architecture: strategy implicit to these infrastructure components

# CH1 – The IS Strategy Triangle

Strategy: Coordinated set of actions to fulfill objectives, purposes and goals. The essence of a strategy is setting limits on what the business will seek to accomplish

Mission: Clear and compelling statement that unifies an organization’s efforts and describes what a firm is all about

Alignment between the IS Strategy Triangle:

* Business Strategy: A well-articulated vision/Plan articulating where a business seeks to go and how it expects to get there (Modeled by Porter of dynamic strategic models)
* Organization Strategy: Organization’s design as well as choices to define, setup, coordinate and control work processes (models: Business diamond and managerial levers)
* Information Systems Strategy: Plan the organization uses in providing information systems and services (Models: Basic framework is people/processes/technology)

## Business Strategy Frameworks

### Porter Generic Business strategic framework:

Fundamental basis of above average performance in the long run is sustainable competitive advantage through:

* Cost Leadership: Aim to be the lowest cost producer in the marketplace; typically only cost leader exists in an industry
* Differentiation: Organization qualifies products in a way that allows it to appear unique in the marketplace. Identify which qualitative dimensions are most important to its customers then find ways to add value along these
* Focus: Limit scope to a narrow segment of the market and tailor offerings to that group of customers. 2 variants:
  + Cost focus: Seek a cost advantage in segment
  + Differentiation focus: Seek to distinguish its products in segment

### Dynamic Environment Strategies

Hypercompetition: speed and aggressiveness of moves create an environment where advantages are rapidly created and eroded.

Not always possible to sustain a competitive advantage.

GE’s DYB – Destroy your business then GYB – Grow your business

Porter’s generic strategies: Firms achieve advantage through cost leadership, differentiation or focus

Dynamic environment strategies: Speed, agility and aggressive moves and countermoves by a firm create competitive advantage.

## Organization Strategy Frameworks

Business Diamond: There are 4 key components to an organization’s design: People, Structure, Tasks and Information/Control

Managerial Levers available to affect changes in an organization:

* Organizational variables: Informal networks, formal reporting relationships, business processes
* Control variables: Decision rights, data, planning, performance measurement and evaluation
* Cultural variables: Values, incentives

## IS Framework

Can be divided in:

* Hardware
* Software
* Networking
* Data

# Chapter 2 – Strategic Use of Information Resources

Information resource: Available data, technology, people and processes within an organization to be used by the manager to perform business processes and tasks.

IT Asset: Anything tangible or not that can be used by a firm in its processes for creating, producing or offering its products.

IT Capability: Something learned or developed over time for the firm to create, produce or offer products. IT Capability makes possible for a firm to sue IT assets.

IS Infrastructure: Is an IT Asset that includes each information resource’s constituent components (data, technology, people and processes).

3 Major categories of IT capabilities are:

* Technical skills: applied to designing, developing and implementing IS
* IT Management skills: Ability to manage IS department and projects
* Relationship skills: Ability to with resources outside of IS:
  + Spanning: good relationship with business managers
  + Externally focused: Relationship with outsourcing or vendor

Network effect: The value to a network node increases as others join the network.

#### Porter’s 5 competitive forces:

* Threat of new entrants: Use IT to erect entry barriers
* Bargaining power of buyers: Customers can have access to multiple retail outlets. IS used to increase switching costs to decrease likelihood of switching
* Bargaining power of suppliers: Suppliers often try to lock in customers. Strongest force for firms with few suppliers, quality of supplier’s input is crucial to the finished product, or volume of purchase is insignificant to supplier
* Threat of substitutes
* Industry competitors: Rivalry is high when it is expensive for a firm to leave the industry, growth rate is declining or products have lost differentiation.

#### Value chain:

Primary activities relate directly to the value created in a product, support activities make it possible for the primary activities to exist.

Framework suggests that competition stems from 2 sources: lowering the cost to perform activities and adding value to service so that buyers will buy more.

Lowering activity costs only achieves an advantage if the firm possesses information about competitor’s cost structure. Reducing isolated costs can improve profits temporarily, but does not provide a clear competitive advantage unless costs can be lowered below competition and enable lower prices.

Adding value can only be used to gain strategic advantage if the firm possesses accurate information regarding customers – which product attributes are valuable.

#### Resource Based View

RBV – maintains that competitive advantage comes from the information and other resources of the firm. Focuses on the resources that it can manage strategically in a rapidly changing competitive environment.

RBV has 2 types of information resources:

* Those that enable a firm to attain competitive advantage: Resource is valuable when it enables the firm to become more efficient or effective
* Enable a firm to sustain competitive advantage over long term: only way to do that is to continue to innovate and protect against resources imitation, substitution or transfer.

Social Capital: sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit.

Co-Opetition: Strategy whereby companies cooperate and compete at the same time with companies in its value net.

Value net: includes a company and its competitors and complementers, and well as customers and suppliers.

Complementer: company who’s product or service is used in conjunction with a particular product or service to make a more useful set for the customer.

Risks:

* Awaking sleeping giant – when competitors have deeper pockets or innovation triggers additional expenses
* Demonstrating bad timing
* Demonstrating bad timing
* Implementing IS poorly
* Failing to deliver on user wants
* Mobile based alternatives removes advantage
* Running afoul the law

# CH3 – Organizational strategy and Information Systems

Organization strategy: Organization design and managerial choices that define, setup, coordinate and control work processes. Composed of 3 components.

* Organizational design variables:
  + Decision rights: Authority to initiate, approve, implement and control various decisions
  + Business Process: Set of ordered tasks needed to complete key business objectives
  + Formal reporting relationships: Structures setup to ensure coordination between units
  + Informal networks: ad hoc groups outside of formal reporting for information sharing
* Management Control Variables:
  + Planning: Process to establish and implement future decisions
  + Data collection: Facts collected and stored regarding organization
  + Performance measurement: Measures to assess success of plan execution
  + Incentives: devices (monetary or not) used to motivate behavior
* Organizational culture:
  + Values: Set of implicit and explicit beliefs that underlies decisions made and action taken

Culture: Set of shared values and beliefs that a group holds that determine how the group perceives and reacts to the environment.

Beliefs: Perceptions that people hold about how things are done in a community.

Values: Reflect the community’s aspirations about the way things should be done

* Espoused values: Explicitly stated preferred organization values (should be aligned with Enacted values)
* Enacted values: Values actually exhibited or displayed by employee behaviors

Organizational structures:

* Hierarchical:
  + Burocratic form with defined levels of management
  + Division of labor based on functions/specialization
  + Centralized and specified decision rights. Unity of command = everyone has one supervisor
* Flat/Horizontal:
  + Decision making is decentralized and pushed down to the low levels of the organization
  + Informal roles, planning and control, often small young orgs
* Matrix:
  + Workers assigned many bosses to integrate multiple business dimensions
  + Dual reporting relationships based on function and purpose
  + Distributed power structure; shared decision rights
  + Can be confusing/time consuming meetings for conflict resolution
* Networked:
  + Flat and hierarchical at the same time
  + Formal an informal communication networks that connect part of the organization
  + Known for flexibility and adaptability; suited for unstable environments
  + Decentralized decision rights, distributed information systems
* Zero Time Organization:
  + Instant customization; ability to respond to customers immediately
  + Needs 5 key principals: Instant value alignment, instant learning, instant involvement, instant adaptation, instant execution

Technological leveling: Technology enables individuals from all parts of organization to reach others parts of the organization

Social Network: IT enabled network that links individuals together

Role of IS for management control systems:

* Data Collection: Enable collection and aggregation of information. 2 major challenges:
  + Embed monitoring tasks in everyday work
  + Reduce negative impact to workers being monitored; talks to collect information for management control are perceived as NVA. Awareness of monitoring can demotivate and decrease moral
* Evaluation: Facilitates comparison between actual and desired performance
* Communication: Speed flow if information

Role of IS in planning:

* Provide data to develop strategic plan
* Prepare scenarios and sensitivity analysis
* Can automate planning process
* IS can be a major component of strategic plan

# CH 4 - IS and Design of Work

Work design framework:

* What work will be performed
* Who is going to do the work
* Where will the work be performed
* When will the work be performed
* How can IT increase effectiveness of the workers doing the work

How IT changes the nature of work:

* Created new types of work
* Changing the way work is done
  + Changing communication patterns: Email, Intranet, IM, VoIP, Video Conference, VPN, RSS, FTP
  + Changing collaboration: Social Networking, Blogs, Wikis, Groupware
* Changing Organizational Decision Making and Information Processing
* Changing Collaboration
* Changing ways to connect: can be always connected, boundaries between work and play are blurred and people struggle to balance work life
* New challenges in managing people: Workforce that is spread, isolated from direct supervision
* New Hiring practices:
  + Workers need more skills (IT)
  + IT use affects the array of non-technical skills needed in the organization
  + IT is essential part in hiring process
  + Recruiting efforts should reflect new approaches people are using for job search

Activity stream: List of activities on a Web site that, in a brief manner, highlight what the individuals connected to that stream is doing. Give a good sense of what is happening in a community

Telecommuting: Employees work from home, customer site or other convenient location instead of coming to office. Drivers pushing:

* Shift to knowledge based work
* Changing demographics and lifestyle preferences
* New technologies with enhanced bandwidth
* Reliance on web
* Energy concern (gas for commuting)

Disadvantages:

* Challenge for managers to address performance evaluation and compensation
* Disconnect employees from company culture and makes them feel isolated

Virtual team: 2+ people who:

* Work together interdependently with mutual accountability to achieve a common goal
* No not work in same place and/or same time
* Must use electronic communications to communicate/coordinate activities

Challenges of VTs:

* Communications: Time zones, lack of body language
* Technology: members must be familiar with various technologies
* Team Diversity: Members from different organizations/culture:
  + Harder to establish group identity
  + Need good communication skills
  + Difficult to build trust
  + Can have different perceptions about time / deadlines

Managerial issues with VTs:

* Leaders can’t easily observe behaviors; performance evaluates in terms of output
* Compensation should be based on team performance

Resisting change by:

* Deny the system is up and running
* Sabotage the system
* Try to convince themselves and other that new system will not change status quo
* Refuse to use new system

Technology Acceptance Model (TAM):

* Unfreeze:
  + Create compelling reason why change is needed
  + Create guiding coalition
  + Develop vision and strategy
  + Communicate change vision
* Changing:
  + Empower broad based action: encourage risk taking
  + Generate short term wins
  + Consolidate gains and produce more change
* Re-Freezing
  + Anchor new approach in the culture. Highlight areas where new behavior/process changes are linked to success

Simplified TAM 3:

* Inputs:
  + Perceived usefulness
  + System characteristics
  + Social influence
  + Facilitating conditions
* Goes up and down into perceived usefulness/ease of use
* Behavioral intention
* Use behavior

# CH 5 – IS for managing business processes

Transformation requires discontinuous thinking. Breakthrough performance can’t be achieved by cutting fat or automating existing processes.

Silo perspective: Hierarchical structure where departments are organized on the basis of their core competencies. Silos are self-contained functional units.

* Pros:
  + Allow optimization of expertize and training
  + Avoid redundancy in expertise
* Cons:
  + Sub optimization – departments re-create information maintained by other departments
  + Wide communication aps between departments, difficult hand offs
  + Silos operate to maximize local goals, often losing sight of org. goal

Process perspective

Process: Interrelated sequential set of activities and tasks that turns input into outputs, includes:

* A beginning and an end
* Inputs and outputs
* Set of tasks
* A set of metrics to measure effectiveness

Workflow: set of connected tasks and activities that take place within a process

Manage a process by:

* Identify customers of process; who receives the output
* Identify customers’ requirements: criteria for successful implementation
* Clarify the value each process adds to overall org. goal

Agile process: Process that iterates through a constant renewal cycle of design, deliver, evaluate, redesign – intension is to simplify re-design and configuration. Designed to be flexible and easily adaptable.

2 techniques used to transform a business process:

* (BPR) Business Process Reengineering: radical redesign
* (TQM) Total Quality Management: Incremental continuous process improvement

Incremental change involves the following activities:

* Chose a process to improve
* Chose a metric to evaluate the process
* Enable personnel involved in the process to find ways to improve it based on the metric\

Six Sigma: Incremental approach used by TQM – aim at eliminating all defects:

* DMAIC: Define, Measure, Analyze, Improve, Control
* DMADV: Define, Measure, Analyze, Design, Verify

BPM – Business Process Management: Well defined set of tools and IT assets that manages a process. Can have: Org view, data view, functional view, control view

Operation design choices:

* Standardize process across operational units
* Integrate process across units

Enterprise system: Set of IS tools used to enable information flow between processes across the organization. Help ensure integration and coordination of functions.

Enterprise Information System (EIS): Composed of:

* CRM
* ERP:
  + Integrate information flows through the company
  + Typically in a commercial package
  + Reflect industry best practices
  + Some assembly required
  + Constantly evolving
* CSM:
  + Manages integration of supply chain – process that begins with raw materials and ends with a product or service
  + Future: Demand driven supply networks, speed up Forecast-to-stock and order-to-cash
* PLM:
  + Automates steps that transform ideas into products – from idea to EOL product

Benefits of EIS:

* Modules easily communicate with each other; efficiencies over standalone systems
* Standardization of data

Issues of EIS:

* Expensive and long to implement
* Risky
* Business must reengineer its processes; rare that COTS works on existing processes

Times when appropriate to let EIS drive business process design:

* Business just starting and business process not yet clearly defined
* When org. does not rely on business process as a source of competitive advantage
* When current systems are in crisis and no time/resources/knowledge to fix them

Inappropriate to let EIS drive business process when:

* Operations business process drives a strategic advantage. Replacing with COTS vendor’s EIS = lose competitive advantage
* Features of packages and needs of the business do not fit

Challenges of implementation: Deciding what to share, who to share it with, security, encryption